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TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

No. V.

American Mission Press. 1842.

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VII. 4

TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

FOR THE YEAR M.DCCC.XLII.

BOMBAY:

PRINTED AT THE AMERICAN MISSION PRESS,

BY THOMAS GRAHAM.

1842.

No. V.

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PREFACE.

It has been judged expedient to reprint in the appendix the table of contents of all the published numbers of the Transactions of the Society. This course has been adopted with the view of bringing under the notice of members, the several subjects to which attention has been directed,—in order that the re-discussion of topics, already fully considered, may as much as possible be avoided, and that the investigations of subsequent contributors may be guided into fresh channels of inquiry.

It will not probably be disputed, that to give prominence, at stated intervals, to the past proceedings of Societies, is a measure calculated to serve a useful purpose by tending to bring about a permanent movement in advance, and to lessen that liability, to which persons similarly circumstanced are more or less exposed, of unknowingly repeating the acts of those who have gone before them.

If this remark be generally applicable, it is very specially so, of Societies in India, where changes are so frequent and so complete,—that it must be within the observation of even a very limited experience to have witnessed questions and measures which had been discussed and settled, brought forward again after the lapse of a very few years, and treated as if they had then for the first time attracted notice. Though such drawbacks to steady and progressive improvement, are, perhaps it may be admitted, to a certain extent inseparable from the condition of a fluctuating society, — still it is surely not the course of wisdom to yield to the force of these adverse circumstances

without making some attempt to lessen it, by adopting judicious measures of counteraction, —and of such, perhaps the preservation and publication of Reports and Essays, and the occasional bringing them to recollection,— are not the least important.

While the obligations conferred on the Society, by the liberal support of Government and the unceasing and courteous co-operation of the Medical Board, are here gratefully acknowledged,— a hope is at the same time indulged, that the proceedings of the Society will be found to have been not altogether unfruitful, but to have tended to preserve and to diffuse, through the medium of their Transactions, much important information relating to medical and physical science.

It is indeed very probable, that many of these published reports, —such for example as relate to the countries beyond the Indus and to the operations of the Steam Flotilla on the rivers of Mesopotamia,— will in a few years hence, be valued much more highly than at present, and will thus afford a more complete justification of that estimate of the utility of the Society's labours which has been expressed in the preceding paragraph.

Bombay; April, 1843.

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

Patrons.

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The Medical Board of Bombay,
And Deputy Inspector General of Hospitals.

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1842.

TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

1842.

Article I.

Report of the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, from the 1st January, to the 31st December 1841, *together with an account af the Climate and Medical Topography of the Upper Euphrates.* By John C. Floyd, Esq.

Presented by the Medical Board, June 1842.

In the report affixed to the annual return of the diseases which occurred in this Flotilla for the year 1840, I considered it my duty to lay before the Medical Board, a brief account of the Medical Topography of the southern parts of Mesopotamia, as a means whereby to the better understanding of the diseases of the country, as well as to elucidate, what may become at a future period the scene of more extensive military, as well as naval operations; and with the same views, I shall now describe the northern part of Mesopotamia, through which the upper Euphrates flows, and upon which river the Honorable Company's armed Steamers, Nitocris and Nimrod, have been employed during the past year.

Observations on the country and the river Euphrates.—The country to which the following observations refer, extends along the line of the Euphrates from the 33rd to the 37th degree of north latitude, and unlike

the "Delta" to the south, it is for the most part hilly and void of canals, except in the vicinity of Hilla and Bagdad, where these ancient monuments of the industry of the population and flourishing state of the country, still enable its oppressed inhabitants of to day, to draw forth a precarious return of crops from the surrounding barrenness. From Hilla to Birjeck, the most northerly station to which it has as yet been navigated by us, the distance is nearly nine hundred miles. Its course for seven hundred miles or as low as Felugia, is through a pebbly channel, and from the latter to Hilla, it is through the alluvial soil. It preserves the same rapid and serpentine course as it has in the Delta, but is much more rapid above, owing to numerous artificial walls erected in the river for the purposes of irrigation. The average breadth of the river is from three to five hundred yards, having a current in the high season of five knots, and the low two knots, with a depth of water varying from three to ten feet during the latter.

Geological features of the country.—The valley through which the Euphrates flows in the districts now under consideration, varies in breadth from two to five miles, except betwixt Hitt and Anna, a distance of eighty miles, where it closes in, and becomes in many places less than half a mile in breadth. This valley is for the most part composed of the alluvial deposits from the river, and the breccia of chalk and flints brought down, by its strong current during the high season. Through these the river cuts its way, annually changing its course from the formation of bars at the bottom of each reach, which in time become high pebbly banks, and direct the river upon the opposite alluvial ones. These in their turn becoming washed away, are deposited on the next pebbly one, which alternate succession continues as low as Hitt, when breccia ceases, and the river winds on through the alluvium, which latter near Felugia, merges into that of the desert.

The hills which bound this valley are from three to seven hundred feet high, in its upper part; and in its lower, they gradually sink into the Mesopotamian and Syrian deserts. They belong chiefly to the Neptunian class, being composed between Bir and Belis, of chalk and gypsum resting upon a tertiary sandstone; at the latter place ocre and traces of iron are met with; from Jiaber castle to Racca, a stratum of flint breccia to the depth of sixty feet, in many places, is superimposed on the sandstone; lower down to Zenobia, the only Plutonic rocks on the river are seen, they are lava and seem to have flowed across Syria, from the North West; from this to Hitt is all sandstone as above. At the latter

place, beds of marl and crystalline gypsum with mica slate, rest upon the sandstone, in some places the latter appears to have been upheaved very much. It is in this formation that the bitumen and naptha springs, so celebrated in antiquity, shew themselves. The strike of the hills bordering the valley of the Euphrates is chiefly from the N.N.W. except at Zenobia where the volcanic range mentioned above runs North West and South East; they have scarcely any dip. The river running parallel with the hills in primeval times, has cut the latter into a number of immense basins, varying from two to five miles in breadth; these are in many places connected by narrow channels and alternating form the valley of the upper Euphrates. The action of the river may be traced for a hundred feet above its present level, thereby demonstrating the corroding power of its stream, since the time when the waters first began to depart off the face of the earth. It is strange that as yet, we have not been able to discover any fossil remains in these formations.

Stations of the Steamers. *Musseib.*—Our first station after passing Hilla is at the town of Musseib, a place second in importance to Hilla, and of considerable traffic with the districts higher up the river. It contains about 5,000 inhabitants, chiefly Arabs, like those of Hilla. It may be considered healthy, though there is reason to believe, that its vicinity to the marshy districts of Babylon may bring it within the range of miasmatic fevers. From Musseib to Felugia the alluvial banks are low and liable to be inundated during the periodical rise of the river.

Felugia. — Is in the same latitude as Bagdad, being 34 miles west of the latter place, it is only the site of a large khan and ferry, being on the direct line to Bagdad, over a level country; here I proposed to establish an hospital in the event of the Euphrates being permanently opened for navigation, as the short distance between the two rivers would always render the Medical officer of the expedition available to both Flotillas. From Felugia to Hitt the distance is eighty miles, the country begins to rise, the banks are higher and well cultivated, chiefly by the Deleem Arabs. In this district on the left bank, are recognized the remains of the once royal cities of Perisabour and Ambar, also the supposed site of the battle of Cunaxa, from which may be dated the commencement of the misfortunes which afterwards befel the 10,000 Greeks, and caused them to undertake a retreat so honorable to themselves, by reason of the numerous difficulties under which it was accomplished.

Hitt.—Hitt, the Iss of Scripture and Izanedpolis of the Greeks, is eigh-

ty miles higher up the river than Felugia. It is situated upon the right bank on an isolated rock of limestone which has been scarped all round and rendered capable of defence; the houses terrace one above the other, which renders the place very conspicuous from a distance. The town is mean in the extreme, it boasts only of one minaret and has no bazar of importance. It contains about 3,000 inhabitants, chiefly Arabs of the Aghail tribe, the descendants of the Saracenic conqueror of Spain; besides a remnant of that most interesting tribe of Jews, the sons of Jehonadab spoken of in holy writ, and discovered by Wolf near Mecca. The people of Hitt have a sickly appearance, their faces being of a dark and chlorotic hue; this I attribute to the impregnation of their atmosphere with sulphurated Hydrogen from the bitumen springs, in the immediate neighbourhood of the town; as this gas is well known to be very injurious to animal life. In other respects this place may be considered healthy.

The district round Hitt, is a barren rocky waste, affording no supplies, except sheep and wheat, which latter is produced on the alluvial banks of the river. The trade of Hitt consists in the exportation of gypsum to Bagdad and Hilla for the purpose of building, also oil and salt, and in the making of bitumen boats and corrales, which are used extensively upon both these rivers and are of the same description as those mentioned by Herodotus. The springs from which this bitumen is obtained, are celebrated as having been visited by Alexander the Great, and the Emperor Trajan. They afford an exhaustless supply, and therefore it is very cheap; when mixed with coal dust or such refuse, it affords a valuable fuel to steamers, and as such it is worthy the attention of the Superintendent of the Indian Navy, as it might be exported to the Persian Gulf and Bombay, at a very cheap rate, and it would prove an economical way of consuming the many thousand tons of coal dust which must otherwise be lost. To the people of Hitt, bitumen is every thing; their drinking vessels, terraces, streets and canaux for irrigation are covered with it, and it affords fire and candles to them during the winter. The temperature of the spring in the heat of summer was 92° Fahr. and water running from it is drawn off and evaporated, by which means a great quantity of common salt is obtained, which is not however very pure, owing to its containing some nitrates or sulphates.

River between Hitt and Anna.—From Hitt to Anna the distance by the river is twelve miles, which is here much more rapid in consequence of the hills closing in, and numerous stone dikes extending half way across the river on each side, for the purpose of directing the force of the stream to

the large mills at their ends ; by which means the water has been raised from time immemorial for irrigating the land, but erroneously mistaken by Alexander the Great, as means of defence against his irresistible legions, thereby confounding them with similar structures thrown across the Tigris by the Persians. The alluvium is not so extensive in the district for cultivation and there is little jungle.

Islands.—Several picturesque little islands almost at equal distances, divide the stream between Hitt and Anna; three of these, Juba, Aloose, and Haditha, contain each about 500 inhabitants under the government of a Sheik, and afford the usual Arab supplies. Upon these islands are still found the remains of ancient Roman fortifications.

Anna is pleasantly situated on the right bank of the river, at the foot of the high hills which here bound the valley. The town extends for more than two miles along a narrow stripe of alluvial soil, which is here lined with a belt of fine date trees. Its Arab inhabitants are composed of the Aghail tribe, like those of Hitt, and number about 4,000, amongst whom are a few Jews but no Christians. The town has no bazars of importance, but its gardens are well supplied with fruit and vegetables ; it suffered very much during the great inundation of the river in 1831, after which came the plague and completed the depopulation of the place. Anna, though only four days journey to the north of Bagdad, possesses a much cooler climate. The heats of summer are, however, still great and sufficient to bring to maturity the fruit of the date-palm, and this place may be considered as the most northerly latitude of that invaluable tree. It is without doubt a very healthy place and well adapted for a station. Opposite to this town are several small islands also inhabited. After leaving Anna, on rounding the angle of the hills, which the river forms in coming from the north, there is another island and town called Rowa, embosomed in rich gardens, and subject to the Sheik of Anna. This may be considered as the limit to the territory as well as the power of the Pacha of Bagdad, for the Arabs to the north as far as Racca, though nominally under the Pachas of Aleppo, Orfa and Bagdad, do not in fact acknowledge either, living as they do in that happy independence which has characterized them since the times of their Patriarchal ancestors.

River betwixt Anna and Deir.—From Anna to Deir the next station, two hundred and forty miles, there is little worthy of remark ; the valley and consequently the alluvium become broader, varying from three to ten miles, with deep and extensive Tamarisk jungles. Throughout this fine

district all is desolation, there being no shadow of life or commerce, beyond the five Arab villages ; which here and there obtrude themselves upon the banks, and we behold with admiration mingled with regret, the vestiges of the Scripture cities of Erzi and Rahabah, besides the Corsote of Zenophon and the Circessium of Diocletian, the latter situated at the embouchure of the "Chabour," a tributary of the Euphrates, which rises in the mountains of Sinjar.

El Deir is a town situated upon the margin of the sandstone hills on the right bank of the river ; it has a mean appearance and contains about 2,500 Arabs, of Jewish extraction. It is governed by two Sheiks, who share between them the profits as well as the animosities of their separate people. The vicinity of Deir is well cultivated, and the town affords the usual Arab supplies. The oil made from the simsim, and ghee appear to be the only articles of exportation ; being on the great caravan routes from Damascus and Aleppo to Bagdad, it has a considerable transit trade. This is a very healthy place and well adapted for a depot being only five days from Aleppo, and six from Damascus.

River betwixt Deir and Jiaber castle.—From Deir to Jiaber castle it is one hundred and eighty miles by the river; the country is more elevated and interesting, the banks of the river being lined in many places with forests of mulberry and poplar, in addition to the everlasting tamarisk : cultivation is also more extensive, as we proceed northward, the great tribes of the Subka, Ahfadthly and Welder having settled down for the purpose of agriculture, like those on the lower part of the river. The ancient fortresses of Haliby and Telibee (probably founded by the Palmyrean Queen) defending a narrow pass of the river, and Racca, once the summer residence of the Caliphs, and at an earlier period, the site of Nicephorium founded by Alexander the Great, are amongst the most interesting places upon this part of the river.

Jiaber Castle on the left bank of the river in latitude 35° 54′ north, has been a station of the Steamers during the greater part of last summer. It is of Saracenic construction and situated upon an isolated hill of sandstone and gypsum nearly three hundred feet above the level of the river, which flows in a rich and beautiful plain, beneath its time worn ramparts. The ruins are of considerable extent but deserted; they contain a great number of serdaubs and vaults, which would prove invaluable to an army in this part of the country ; it could be rendered easy of defence against the Arabs, but from the hills which command it in the distance, it could not

long resist the effects of artillery. The valley at Jiaber is about two miles broad, and is bounded on the opposite side of the river, by a bluff range of sandstone and gypsum hills, which we have named point Hobhouse, on account of the support given to this expedition by the late President of the Board of Control.

River betwixt Jiaber and Belis.—As this point is on the direct road to Aleppo about seventy-six miles off, it has been proposed as our most northerly station; by which the great serpentine course of the river to Belis, the nearest point to Aleppo will be avoided. In a medical point of view it is of no importance as both places are equally healthy.

From Jiaber to Belis is fifty miles by the winding of the river, which here has its course nearly west, and sixteen in a direct line; the banks are well cultivated by the Welder Arabs.

Meschina or Belis.—Meschina erroneously said to be the site of the park and palace of Baulas, consists of three fine Saracenic ruins on a low range of hills, which form the northern boundary of a verdant plain, rich with the varying floras of spring and autumn. This place is in lat. 55° 59′ north and is the nearest point of the river to Aleppo, which is about fifty-five miles nearly west of it, over a very level and hard road, well supplied with water and villages, after the first twenty-five miles are passed.

River betwixt Belis and Birjeck.—From Belis to Birjeck the distance is one hundred and five miles; the surrounding country presents the monotonous and deserted appearance which it does to the south, being always liable to the plundering excursions of the Bedouin Arabs. Belis may be also considered as the most northerly limit of the agricultural Arabs, as well as the most southerly limit of the pastoral Turcomans, who come down so far to feed their flocks in the rich plains bordering the river.

Birjeck.—Birjeck in latitude 27° north is a mean Turkish town, situated on the face of the hills on the left bank of the river, and fortified after the Saracenic style, though its ancient citadel is of Roman construction and fast tottering to ruin. It contains 6,000 inhabitants, chiefly Turks; its bazars are few and far from being well supplied, considering its favourable situation as being upon the great caravan roads from Aleppo, Antab, Diarbekir, Orfa and Mosal, with all of which places it has a considerable transit trade. Birjeck was the place selected for the erection of the steamers of the first Euphrates expedition, and from which place they commenced the descent of this great river. It was not considered healthy at that time as

they lost many of their crews from fever while there, but that mortality with more truth might be attributed to their operations carried on in the marshy plains of Antioch, where they first became ill, and also to the privations and hardships which they had afterwards to undergo in prosecuting the arduous undertaking of transporting the machinery thither. The climate of Birjeck, like all the northern parts of these rivers, comprises the extremes of heat and cold, the frost of winter continuing nearly three months and followed by heavy rains. We see nothing in all this to render the place unhealthy, on the contrary we believe it to be salubrious and admirably adapted for a depot and commercial intercourse. Birjeck is distant one thousand one hundred miles from the Persian Gulf by river navigation, ninety miles from Aleppo by an excellent road, and one hundred and eighty-seven miles from Iskanderoon, the nearest part of the Mediterranean, the latter part of this road being very hilly.

The regions which we have now surveyed lying along the banks of the upper Euphrates, have been celebrated from the most remote ages, from the time when Babel's proud tower sought the skies, until the destruction of the Caliphate by the inundating hordes of Tartars under Hulicu; during which, the rich capitals of Nineveh, Babylon, Selucia and Ctesiphon rose in succession to aggrandize themselves out of the ruins of its predecessor, and finally by their growing wealth and power becoming objects of ambition to Greece and Rome, they often drew together the well disciplined legions of the West to contend on the plains of Mesopotamia for the empire of the East. But, that which most commands our attention, as well as our admiration, are the military expeditions of Cyrus the younger and the emperor Julian along the left bank of this river as recorded by their respective historians, Zenophon and Ammianus Marcellinus. These, we regret, that the nature of this report, will not allow us to do more than notice; we can however add our unqualified belief in the Geographical and other facts therein contained, and we may mention that in case of any army from the North invading this country at the present day, we believe that they would have to follow not only in the very steps of their Greek and Roman predecessors, but would have also to take the same precautionary measures to secure supplies and keep up the discipline of their troops; otherwise the attempt would prove futile in a country impoverished as this has been, by the sword, and overrun by so many plundering troops of Arabs, who if they could not conquer, would always harass an army as of old, and be ever ready to cut off its detached parties.

Surrounding Country.—The surrounding country composes the Sy-

rian and Mesopotamian deserts, which may be said to be destitute of animal and vegetable life, the latter more through the neglect of man than nature, for the subsoil is good, and the rock a cretaceous sandstone yields abundance of water when bored into. The only villages are those on the great caravan route from Aleppo to Palmyra and Damascus; again on the Mesopotamian side, there is not a village betwixt the rivers for hundreds of miles, if we except those to the north of the Chabour river, on the roads to Orfa, Sinjar and Mosul. The description of this desert by Zenophon, now more than two thousand two hundred years back, proves so well the faithfulness of his narrative, and the accuracy of his observations, that we cannot do better than transcribe it in his own words. "The country (he says) was a plain throughout, even as a sea and full of wormwood, and if any other kind of shrubs or reeds grow there, they had all an aromatic smell, but no trees could be seen; bustards, ostriches, antelopes and wild asses, appeared to be the only inhabitants of the desert, and the fatigues of the march were alleviated by those of the chase." And if we add to these the animals which are met with along the banks of the river, as the stag, boar, the Asiatic varieties of the feline and canine class, and a few of the rodentia, besides many of the aquatic birds of Europe, a very general idea of the zoology of the country may be formed.

Soil.—In the valley of the Euphrates as I have stated above, the soil consists of a deep alluvial stratum which contains a great quantity of silicious particles and is of the same plastic nature as that of the Delta; the hills along the river are quite bare of soil and consequently void of vegetation; in the desert, however, the rock being of a soft and porous nature is covered with a sufficient quantity of debris for the purposes of cultivation, and where the resources of art have been brought to the assistance of nature in raising water, as in that part of the desert between Aleppo and the river, the whole might be turned into a fruitful field. Indeed it is only in this way, that we can account for the immense population which in former times existed in this country, as is evidenced by the crumbling temples and ruined towns which every where dot the face of the Syrian desert.

Vegetation. — The vegetation on the banks of the upper Euphrates is exceedingly scanty, which circumstance may be attributed to the banks of the river being high, and the neglect of all means of irrigation; as otherwise the soil and the climate are favourable to the production of all those plants peculiar to the temperate transition zone, which this country is in. Immense jungles of tamarisk, willow and glycirrhiza line the banks, as in the lower parts of the river; a few species of the compositæ

cruciferæ, umbelliferæ, ranunculaceæ, malvaceæ, and convolvolaceæ compose its flora. To these we may add the capparis spinosa, poterium spinosum, mesambryantherum crystallinum, and cucurbitous plants ; besides several species of salicorniæ and mimosæ, all of which are cropped by the camel, that pattern of humble and patient endurance. Anemones in great variety cover the desert in spring as with a carpet, and the varied class of the labiatæ impregnate the air with their odours, as the season advances. The vegetable productions cultivated by the Arabs are, wheat, barley, durra (the holcus sorgum of Linneus) which rivals that of Egypt, sesamum orientale, from which they procure their oil, besides cotton, and rice. The date, grape, orange, lemon, mulberry, fig, pomegranate, zujub, (zizyphus lotus) melons and cucumbers, grow to the greatest perfection, and as we proceed northwards towards Birjeck, the apple, cherry, peach, plum and apricot rival those of Europe ; to which we may also add most of the culinary vegetables of that country. In conclusion, we may remark, that what Malte Brun said of the state of Syria and its productions, may with equal justice be extended to the banks of the Euphrates. " That if the advantages of nature were duly seconded by the efforts of human skill, we might in the space of twenty leagues bring together in Syria, all the vegetable productions of the most distant countries ;" a combination of circumstances which can rarely be found in the most favoured lands, and shews how indulgent nature has been, did not man mar all with an impious hand.

Climate.—The observations which we made in our last year's report respecting the climate of the southern part of these rivers, may with propriety be extended as far north as Anna, for there is no very sensible alteration until we arrive near that place ; but there the difference becomes very apparent, the spring being cooler and more prolonged, the great heat of summer diminishing by twenty per cent as compared with Bagdad, and the winter extending over a period of three months, during which there is hard frost. The seasons we consider to be in every respect a month later than those to the south, and the temperature twenty per cent less ; some idea of the summer heats being less oppressive than Bagdad, may be formed from the fact, that we never had occasion to live or sleep out of our cabins, the contrary being absolutely necessary at the former place. The hot season however is not so healthy on account of the great diurnal range of temperature, which causes heavy dews to descend and exposure to these was generally found to be followed by fever. The prevailing winds are the same as those met with in the lower part of the rivers, viz. the North-west and South-

east; the latter prevail more frequently during the spring and autumn, and are accompanied often times with lightning and an oppressive state of the atmosphere, during which, headache, diarrhœa, and attacks of ague, if the patient has been subject to this fever, are very common. The baneful effects of this wind in the latitudes of the Mediterranean, have been long known to the ancients. Celsus and many others speak of it, and Horace in the Ode to his friend Postumus thus mentions it,

"Frustra per Autumnos nocentem
Corporibus metuemus Austrum"

I myself have paid particular attention to this subject, and I am convinced, that the effects upon the human system which attend this wind are not the result of atmospheric changes, for if any thing, the temperature is then more equal, but owing rather to electrical changes in the atmosphere which re-act upon the blood. This is a point of the most absorbing interest, and worthy the attention of those who have opportunities for more extended observations, as by it much light may be thrown upon the pathology of fevers and cholera: —analogous to these effects are those produced by the hot winds, and sand squalls which prevail on the upper part of these rivers. It will be remembered that it was during one of these squalls, H. M. Steamer Tigris was lost on this river, and in reference to this deplorable catastrophe as well as in its relation to the diseases mentioned above, I trust I shall be excused for inserting the following extract from my Journal. "These squalls for the most part come from the North-west and North-east, they prevail oftener about sunset than any other time of the day, and are not unusually attended with lightning; the body of sand moving in a pyramidal column with its base upon the ground, is carried round to the right in a spiral form sucking up as it were the sand below it. As they mostly come from the North, or the hills and valleys neighbouring the Euphrates, they appear to be owing to a cold current of air rushing into the more rarified strata, when, owing to the disengagement of caloric, electricity is likely generated, and the finer particles of sand being drawn up attract and repel each other in turn, moving in a corkscrew direction from right to left, while they are directed along by the impetus of the current, the vis a tergo, until it moderates, or its base comes in contact with a hill or jungle thereby breaking up the column; on the equilibrium being established between the particles of sand and air, they cease to repel each other any longer." These squalls are not unfrequently accompanied with large nimbi, which obscure the horizon, and portend not a little the destruction which is coming. The

symbolic language of Scripture gives a good idea of its power, when it says, "they shall be chased as the chaff before the wind and a rolling thing before the whirlwind;" and again "your destruction cometh as a whirlwind." Its impetuosity is no less great than the stillness which succeeds it, is sudden. These squalls occur from May to September; they can never prove an obstacle to the navigation of this river, as the accident which occurred to the Tigris was owing, chiefly, to her peculiar construction and being at the time top heavy.

Rains. — The quantity of rain which falls upon the upper Euphrates is sometimes very considerable, being found sufficient for the irrigation of the spring crops; it is however often precarious, and this year there was scarcely any, in consequence of which the vernal crops failed, the desert did not assume its wonted verdure, and the Arabs were put to great straits for herbage for their cattle; the autumnal rains were also deficient and the river did not rise as usual during the winter.

The thermometrical observations made by us at or near Jiaber castle, which is in north latitude 35° 54′ give the following as the result of the diurnal range of temperature.

Thermometer table shewing the average maximum, minimum and medium of temperature, as registered from the Thermometer kept in the H. C. armed Steamer "Nimrod" upon the upper Euphrates, from May 1841 to February, 1842.

Place of observation.	Month of the year.	Thermometer.			Wind and Weather.
		Maximum.	Minimum	Medium.	
Between Anna and Jiaber	May	81	65	76	22 days N.W. to E. 5 days S.W. 4 days calms and 2 days rainy.
Jiaber and Belis . . .	June	89	67	80	25 days N W. and W. 2 days S. W. 2 days calm and one day rain. Sand squalls frequent.
Ditto.	July	92	74	85	27 days N.W. 3 days S.E. and 1 W. S W. Fine clear weather.
Ditto.	August	95	74	87	25 N.W. and 6 S.W. Hot and sultry weather with occasional sand sqalls.
Ditto.	September.	85	64	77	26 days N.W. and 4 days S.E. variable, with cloudy weather, lightning with meteors.
Ditto.	October.	83	59	69	18 days N.W. 13 days S.W. and variable, day time clear and cool.
Below Jiaber . . .	November *A*. . . .	67	49	52	S.E. variable with foggy weather and slight rain, S E. prevailing.
Hanaday Ford . . .	December*	59	34	48	N.E. and S E. variable with hard frost and fine clear weather
Ditto.	January . . *	48	29	46	N.E. and S.E. with some heavy rain towards the end of the month.
Racca	February*	57	37	45	N. E. Prevailing with occasional light showers of rain.

A. Often from 28° to 38° on deck at sunrise.

* During these three months the Thermometer ranges at sunrise from 17° to 34°.

Population. — We have already spoken of the population of the towns, and the few observations which we made last year respecting the same class, refer with equal force to those on this river. The agricultural Arabs along the banks of the upper Euphrates are composed of the following great tribes.

1 Deleem.	6 Subkha.
2 Agadaut.	7 Afadthly.
3 Jabour.	8 Welder.
4 Aboo Mahomed.	9 Beniseed.
5 Buggarah.	10 Mowally and Hadideen.

The two latter tribes are pastoral, and form part of the irregular troops of the Pacha of Aleppo and Orfa, but the other tribes pay a very doubtful allegiance to the Turkish Government, and not unfrequently take part with the great nomade tribes of Anezay and Shummar, to plunder the caravans, and set the Government at defiance. In stature and constitution they seem superior to the southern Arabs, and they bear the extremes of heat and cold in a wonderful degree, the latter being often rendered more severe through their want of clothing and a scanty allowance of food.

Prevailing Diseases. — The diseases which we had occasion to notice last year as prevailing amongst the natives on the southern part of the river, extend themselves to the north, with the exception of intermittent, remittent fevers, and dysentery; these scourges of almost every eastern climate are seldom met with on the upper Euphrates, which may be attributed to the absence of marshes, and the dryness of the soil. The other diseases of which we spoke, such as scrofula, opthalmia, rheumatism, and cutaneous diseases, are rather the result of poverty and filth, than the prejudicial effect of the climate.

Acute inflammatory diseases, are not to be expected amongst a people of such temperate habits as the Arabs, but chronic affections of the mucous linings of the thoracic and abdominal viscera are very common at the vernal and autumnal changes.

Syphilis is seldom or never met with, but of late it has become rather common, owing to the women of the late Egyptian army spreading over the country, after Ibrahim Pacha had evacuated Syria. Endemic and contagious diseases, such as small pox and measles, are very rare; but the plague in 1830 depopulated most of the villages from Aleppo to Bussora.

Health of the European Crew, and Native Christians. — The num-

ber of cases included in the annexed annual return, amounts to 177 which is nearly double that of our crews, but we may here observe that this includes all the re-admissions as well as fresh cases. From June to October, the Steamers remained almost stationary at or near Jiaber Castle, the most convenient place to Aleppo; during which time though not exposed to the sun or water, the crews were attacked more or less with a slight inflammatory fever which I shall describe hereafter. In October we began to descend the river and complete its survey, this led to some exposure on the part of the men, and consequently to a corresponding increase of sickness, which assumed a type in character with the cold damp weather, being mostly slight cases of common continued fever, rheumatism, and affections of the mucous membranes; and if we take into consideration the arduous and enterprizing undertaking in which they were employed, viz. the ascent and descent of this great river for a distance of more than one thousand miles from the Persian Gulf, during which they were often exposed to the effect of a vertical sun while working in the water, it must be apparent, that they enjoyed a very fair immunity from disease, especially as not one case has terminated fatally, a circumstance of rare occurrence in countries under similar parallels of latitude, and which is a good proof of the salubrity of the climate. The relative proportion of sickness occurring amongst the native portion of the crews, almost all of them being natives of this country, as compared with that of the Europeans, is as one to four, which shews the benefits resulting from climatization; for these natives being Christians have the same allowance of diet and grog as the Europeans, and are in all other respects on a similar footing. We shall now make a few remarks upon some of the diseases included in the return, the classification of which is far from being convenient, but I adopt it, being unwilling to depart from what I understand is the form prescribed by the Medical Board.

Continued Fever. — The cases of continued fever included in the return' prevailed chiefly in the commencement of the cold weather; they were attended with very little excitement of the system, and soon yielded on the secretions being restored to their natural state.

Remittent Fever. — These occurred at or near Felugia on the lower part of the river; they were not attended with such violent biliary symptoms as those of Bussora, the cephalic however were more urgent; they required active depletion and mercurial purgatives under which they soon subsided.

Intermittent Fever. — We have already said that miasmatic fevers do

not prevail on the upper Euphrates, owing to the dryness of the soil, and climate; therefore the cases of this fever were for the most part relapses in those men who had got that fever the preceding year at Bussora or in the Persian Gulf.

Inflammatory Fevers. — These it will be seen form the largest and most serious class of diseases which have occurred amongst us. They prevailed chiefly in the months of June and September when the diurnal range of temperature was greatest, averaging upon the deck a range of thirty degrees, with cold raw mornings, occasioned by the bleak north-west, and easterly winds. On our first arrival at Jiaber Castle in June, it was most prevalent amongst us attacking almost every one; strong north-westers blew in the mornings and evenings, attended with lightning and clouds of sand, while the thermometer ranged from 58° to 90° Faht. We believe the checked perspiration occasioned by the above atmospheric vicissitudes to be the chief exciting cause of the fever, for our crew at this time were neither exposed to the direct effects of the sun or water, as the vessels were then stationary; at the same time we must not discard the highly electric state of the atmosphere and the periodic changes of the moon, which would appear to have an indirect effect upon the sanguiferous system and thereby predisposing to fever, as it was mostly present when either one or other of the above states prevailed.

This fever comes on suddenly, and the patient does not generally feel indisposed until the day preceding the attack, he then usually feels languid, and sore all over, as if he had got a severe cold; after this, his back, loins, and extremities become very painful, so much so, that he can scarcely bear to lie in bed. This is succeeded by severe headache, chiefly referred to the forehead, and vertex, the eyes are suffused, the face flushed and the expression wild, the skin is very hot, urine red and scanty, thirst urgent, tongue loaded and white, bowels mostly confined, or else rather loose, with pitchy secretions, the pulse varies from 98 to 115 full and bounding; to which may be added great restlessness and anxiety on the part of the patient. This state of excitement may be arrested in twenty-four hours, by active antiphlogistic treatment; we did not allow it to proceed further, knowing that delirium would be the result, and a fatal termination, as happens from this fever along the shores of the Mediterranean. The above is the most aggravated form of this fever, which appears to resemble very much the Febris ardens of authors, only, as I have stated above, it has not been produced by exposure to the sun's rays; the generality of our cases were of a milder description, being characterized merely by the muscular pains of

the back and extremities, followed by slight pyrexia and dark fetid motions.

Treatment. — The treatment adopted in the first and severest form, was active depletion followed by antimonial diaphoretic and mercurial purgatives. In the milder form as it occurred in most of our natives, an emetic in the first instance, followed by calomel and Dover's powder, and a mild purgative the ensuing morning, were sufficient to arrest the fever and improve the intestinal secretions. Convalescence is rather quick, though the patient for some time after complains of giddiness and debility. The characteristics of this fever, are the severe cephalic and lumbar pains, followed by a hot skin, a full and bounding pulse, and dark pitchy motions. That it is purely inflammatory, we conclude from its rapid course, and quick termination, being unattended with remissions and yielding to the lancet without ptyalism; the blood drawn being usually very dark, much cupped and buffy. While examining the Topography of the north of Syria, I found that this fever prevails from the river to the Mediterranean; the cases* No. 1 and 2 appended to this report, will illustrate the severe form as it occurred in the steamers, while the case No. 3 will show it, as it is met with in Aleppo.

Diarrhœa.—Eleven cases of diarrhœa are returned; they were all of the most mild description, and as I have remarked before, they appear to have some remote connexion with the state of the atmosphere, for they invariably occur during the prevalence of a southerly wind, or the sand squalls, and lightning; and although few are actually returned, yet it is not unusual for most of the crew under such circumstances to complain of griping pains and pitchy motions, and that without any error in diet.

Chronic Gastro-Enterite. — The case included under the head of Dysentery is more properly Chronic Gastro-Enterite; it occurred in Gunner Wm. Brewer of the 2d Battalion, Bombay Artillery; this disease had its origin in Belgaum and re-appeared upon his getting Bussora fever last year. He has been subjected to almost every treatment in succession without any permanent advantage; small doses of mercury and Dover's powder with leeches, blisters and hot baths, were first tried; then mild astringents, with emollient enemata, extract of gentian and ipecacuanha, preparations of iron and nitrate of silver, all these have alike failed; cupping him every three weeks and the administration of Dover's powder and anodyne enema-

* The cases are not inserted.—C. M.

ta, have afforded most relief. The natural consequence of both the disease and treatment has been to debilitate him very much, but as he has been improving since the cold weather set in, we trust that the sea voyage on his way to the Presidency will tend to re-establish his health.

Hepatic Affections. — Two of these are re-admissions, and the other three happened to men who had been ill before with the same disease in Bombay.

Thoracic Affections.—These comprise one case of pneumonia, one of bronchitis, and one of diseased heart (hypertrophy). The latter is that of an artillery-man, who has been under treatment for the last eight months without benefit, and will require to be sent down to be invalided.

Abdominal Affections.—These are for the most part cases of dyspepsia, and as the greater number of these occurred during the hot weather, I am inclined to attribute them to the difficult supply, and often times entire want, of vegetable food. This would also account for many of our men being affected with worms, chiefly lumbrici. There is also another cause of dyspeptic complaints and even fever during the hot weather, which I consider it my duty to bring to the notice of the Medical Board, namely the issuing of the half dram of grog to the crews, at noon, before dinner instead of after it. Its injurious effects are so apparent to every one who has been in a ship, that I need not make any further remarks ; suffice it to say, that if the health of our sailors was consulted they ought not to be allowed grog before 4 P. M. during the hot weather, and even then they should only be supplied with half the present allowance.

Rheumatism.— The cases of Rheumatism were so slight as scarcely to deserve the name.

Testicle disease of. — Only two cases of diseased testicle; one is hernia humoralis and the other is chronic enlargement, the latter proved very obstinate and required a long course of alterative medicine, besides frequent cupping and blistering over the sacrum. It returned three different times from the patient being exposed to wet.

Other Diseases. — These are for the most part anomalous affections, occurring in those who are anxious to skulk in Hospital; three cases of otitis are included amongst these, inflammation of the aural passages would appear to be rather common in the hot weather, owing to the cold north winds which blow towards the morning.

Surgical Diseases.—None of any consequence except one severe contusion of the upper arm, caused by machinery and followed by extensive sloughing.

Concluding Remarks.—In the foregoing remarks upon the climate and diseases of this country, I have endeavoured to condense them as much as possible, so much so, that I fear I may have done it at the expense of being misunderstood; I trust however, that as I have confined myself simply to the facts which came under my own observation, the physical nature and resources of the country, will be sufficiently apparent, so as to enable the Medical Board to form a correct idea of the scene of our operations as well as the difficulties which might be expected to attend them. We have stated that the climate has the inconvenience of being rather hot in summer, but then it is free from endemic disease, and for the succeeding nine months, there is not a finer climate in the universe. The diseases in the annexed* return are not a fair criterion of what might be expected to prevail amongst Europeans placed under more favourable circumstances, for ours were employed in the most harassing duties of surveying and sounding a river one thousand miles from the sea, the accounts of which have been hitherto few and erroneous; but even the sickness which we have had to contend with is very trifling, considering that our crews are composed of men whose constitutions have been more or less impaired by a residence in India.

In conclusion we may observe that should this country ever become the theatre upon which the British army would have to engage, the fullest confidence might be placed in the salubrity of the climate; and if our report last year upon the southern part of Mesopotamia be referred to, it will be seen that it also has a very good climate, if we except Bussora and its vicinity.

I am also of opinion that the climate of southern Mesopotamia, would agree better with an Indian army than a northern one, as I have observed they do not bear well the sudden transition from heat to cold, and for a like reason, I would be disposed to keep the Europeans to the north in order that they might avoid the great heat and more humid atmosphere of the south.

* The return is omitted.—C. M.

Article II.

Annual Report of the Native General Hospital at Bombay, for the year, 1841. By A. Graham, Esq.

Presented by the Medical Board, May 1842.

General Observations. — The * admissions during 1841 exceed those of 1840 while the deaths fall short by 28, thus making a percentage of 13. 6 or rather more than 2 per-cent less than that of the preceding year. This difference, however, is chiefly to be attributed to the almost total absence of epidemic disease which had prevailed to a considerable extent in 1840, during which period cholera destroyed a number of natives in the hot weather, and small pox carried off several from the months of January to July. For five preceding years, these diseases have periodically prevailed with considerable virulence. The last year, however, was remarkably free from any epidemic. Only one case of small pox occurred in the month of January as will be seen by the abstract of diseases given below. The abstract will also shew that the prevailing diseases were Cachexia, Diarrhœa, Dysentery, Fractures, Fevers, Hepatic Affections, External and Thoracic Inflammations, Syphilitic Affections, Scorbutus, and Scorbutic Ulcers, Wounds, and anomalous cases.

It seems almost superfluous again to refer to the cause of the great mortality, occurring in the Native General Hospital. — This circumstance has been often forcibly adverted to in former reports. It arises from the extreme state of disease and destitution under which the patients are admitted. For such cases our only resources were palliation of distressing symptoms, to afford an asylum, and thus to mitigate the sufferings of humanity.

* Number of sick.

Remained 31 December, 1840.	129
Admitted in 1841.	1950
Discharged	1639
Died in Hospital	271
Remained 31 December, 1841	169
Average daily number of sick for the year	146.17
Average number of convalescents	
Died without receiving medical treatment	17

In addition to those included in the Return, there were 17 who died so soon after admission as almost to preclude any medical means. Their diseases were as follows: —

Anasarca	1
Cachexia	7
Dysentery	3
Fevers	3
Gangrene of the Penis	1
Hernia strangulated	1
Pneumonia	1
	17

Annual Return of sick of the Native General Hospital, from the 1st of January to the 31st of December. 1841.

Diseases.	Remained 31st December 1840	Admitted 1841.	Total.	Discharged.	Died.	Remaining.
Apoplexy	..	4	4	..	4	..
Asthma	..	7	7	7	..	..
Cholera biliosa	..	..	..	..	..	..
——,,—— Spasmodica	..	2	2	1	1	..
Cutaneous Diseases	10	156	166	149	5	12
Cachexia	4	73	77	32	45	..
Diarrhœa	1	20	21	6	15	..
Dropsical Affections	2	25	27	13	12	2
Dislocations and Sprains	..	1	1	1	..	..
Delirium Tremens	..	5	5	3	1	1
Dracunculus	1	31	32	30	..	2
Dysentery	7	112	119	59	51	9
Fractures	3	30	33	25	6	2
Fevers — Remittent	2	45	47	29	16	2
Fevers — Intermittent	6	192	198	177	5	16
Gonorrhœa	2	44	46	42	..	4
Hepatic Affections — Acute	2	15	17	10	4	3
Hepatic Affections — Chronic	1	17	18	10	8	..
Inflammations — External	3	39	42	36	3	3
Inflammations — Cephalic	..	5	5	3	1	1
Inflammations — Thoracic	1	50	51	22	19	10
Inflammations — Abdominal	1	3	4	4	..	..
Affections of the urinary organs	..	1	1	..	.	1
Mania	..	3	3	2	..	1
Ophthalmic Affections — Acute	3	13	16	16	..	..
Ophthalmic Affections — Chron	4	28	32	30	..	2
Phthisis Pulmonalis	2	11	13	11	2	..
Rheumatism	19	242	261	219	15	27
Spleen disease of	..	8	8	6	..	2
Syphilitic Affections — Primary	18	180	198	180	7	11
Syphilitic Affections — Secondary	8	43	51	41	4	6
Small Pox	..	1	1	1	..	..
Scurvy	1	56	57	46	3	8
Ulcers	11	109	120	93	9	18
Wounds	5	211	216	200	8	8
Other Diseases	12	168	180	135	27	18
Total	129	1950	2079	1639	271	169

Apoplexy. — Of this disease there were four admissions all of the sanguineous form, and all equally unfavourable in their termination. Three of them were brought from off the public roads, and the fourth from Mazagaon. Of the history of two of them nothing could be ascertained that could be relied on ; regarding the other two, one of them was stated by his friends to have been in good health previous to the occurrence of a scuffle, originating in play ; the attack in the other case arose from excessive drinking. A post mortem examination of one of them, disclosed chronic enlargement and disease of the left meningeal artery which had thrown out excrescences of a warty character : these must have been of long standing. A considerable quantity of blood was also effused between the membranes and the brain. The subject was of a spare, thin habit, and of sickly appearance. Bleeding, both general and local, cold applications to the head, sinapisms to the legs and feet, drastic purgatives, and active enemas formed the plan of treatment.

Asthma.—Seven admissions of the spasmodic form of this disease occurred in old broken down subjects. They were all either successfully treated, or relieved, on the usual plan, namely by emetics, antispasmodics of ether, hyoscyamus, colchicum, opium, and conium, together with expectorants of ammoniacum, squills, tartarized antimony, and digitalis ; the application of blisters, rubefacients or the tartar emetic ointment, to the chest, or between the shoulders, and the administration of tonics, after the subsidence of the more urgent symptoms, were also had recourse to.

Cholera. — Two cases of the spasmodic form of the disease were admitted in January, one of which terminated fatally. In the successful case the patient, a peon of Collector Glass's establishment, was brought to Hospital in the commencement of the stage of collapse when the pulse had begun to fail, and four hours after the purging had commenced. There had not been any vomiting, but the aspect was much sunken, the voice feeble and puerile, pulse quick and weak. He had arrived only a day or two previously from Panwell. The disease was then prevailing on the Poona road, and it is therefore probable that it might have been contracted in that quarter some days before its developement. The treatment consisted in the exhibition of calomel and opium and effervescing draughts repeatedly given, and alternated with stimulants of brandy, camphor, ammonia, &c. Blisters to the epigastrium and sinapisms to the legs and feet. After admission, vomiting and slight, yet painful spasms of the limbs commenced with

great and increasing anxiety, the purging ceased; re-action began when three or four doses of the medicines had been given, and after this he went on well. The powers of the stomach were greatly impaired for several days afterwards, but gradually recovered under the use of hydrarg. cum creta, Dover's powder, and tonics. He was discharged well, but weak on the fifth day.

Cutaneous Affections. — Under this head one hundred and fifty-six cases were admitted, five of which died. These all occured in lepers who had long been victims of the disease in its most formidable and disgusting forms. All had lost the greater number of the fingers and toes, and some even a portion of the foot. In these instances no hope of cure could be entertained, and all that could be effected towards their relief, consisted in the application of astringent lotions to the ulcerated parts. These sometimes, for a while, put on a healthy appearance, yet, although tonics and stimulants and nourishing food, were at the same time given, diarrhœa, of a most intractable description, ultimately supervened and destroyed life.

The other cases under this head, consisted chiefly of Psora, and Psoriasis, and were not sufficiently interesting to call forth any remarks.

Cachexia. — Under this designation seventy-three were admitted, forty-five of which ended fatally. The casualties happened generally in individuals of dissipated habits, and who had long been affected with pulmonary, intestinal, and hepatic affections. In some instances syphilis and the abuse of mercury, as prescribed by the native Hakeems, would appear to have destroyed the constitutional energies, though these cases were not sufficiently marked to admit of being entered under general affections.

The state of emaciation and debility in which the cachectic patients were admitted, generally left but little ground to hope for even a partial restoration to health, and this will account for the numerous casualties that occurred.

Of the few restored to comparative health, a small number only seemed capable of earning a livelihood. The termination of the fatal cases was, in most instances, by diarrhœa. The treatment pursued comprised cordials, tonics, expectorants, and anodynes, together with a nourishing diet, and the liberal use of Port wine, and spirits. The astringent most valuable in these cases, was the sulphate of copper and opium. One or two grains of the former, with two or three of the latter, two, three or four times daily.

Diarrhœa.—Of this there were twenty admissions, six of which ended

fatally. The deaths happened in individuals who applied for aid in a very advanced stage of the disease.

The treatment was varied, according to the circumstances, and generally consisted in the exhibition of chalk mixture, combined with opiates and astringents.

In cases of great severity or long continuance, the sulphate of copper and opium were had recourse to. On the disease yielding, light tonics consisting of infusion of gentian, colomba, or cusparia, and a bland nutritious diet were prescribed.

Dropsical Affections. — Twenty-five admissions, and twelve deaths occurring in patients as the sequelæ of extensive and long continued visceral disease or as the sequence of fevers. Albuminous urine frequently existed. What gives rise to this condition or alteration in the urine seems unknown. One singular case that came under observation may be remarked upon. The patient was a married woman who had long suffered from disease of the uterus, irregularity of the catamenia, and a frequent muco-sanious discharge from the vagina. The urine was copious and clear, appetite little impaired, and general health not much affected. She at first, supposed that she was pregnant, but from the long continuance of the ailment this idea was abandoned. After a little preparatory treatment paracentesis abdominis was performed, a small portion of a glairy fluid escaped though a large sized canula. This fluid coagulated immediately on exposure to the air shortly after the operation, and while the patient was warm in bed, a large quantity of the same fluid was freely discharged amounting to several pints. This viscid, gelatinous effusion was most likely caused by subacute or chronic inflammation of the peritoneum. The sudden discharge caused great weakness and sinking which were removed by a light bandage and cordials. The fluid soon re-accumulated to its former extent, and becoming exceedingly anxious and alarmed she was allowed to return home and shortly afterwards died.

Another case requiring a few observations may be alluded to. This was consecutive to and accompamied with a chronic pulmonary affection. In the primary disease auscultation shewed the existence of great contraction of the bronchial tubes. Paracentesis abdominis was performed and four or five pints of fluid drawn off with relief. The bronchial affection, however, continued throughout with occasional intervals of abatement. The treatment consisted in cupping, leeching, blisters and tartar emetic ointment. — Tartar emetic alone and combined with saline purgatives internally ; and calomel, squills, digitalis, and colchicum, were also exhibited

with cream of tartar for common drink. Under this treatment he had nearly recovered when he suddenly quitted the Hospital, and returned in a month with his ailment of a more intense character than at any former period. The scrotum was enormously distended with the dropsical effusion. Scarifications were made and the watery oozing from them was most extensive, and continued until nearly all the dropsical symptoms disappeared; recourse was again had to the diuretics, and the former plan of treatment with the most beneficial results. The diuretics which excite the absorbing vessels and remove impediments to the lymphatic and venous circulation, Dr. Copland states, are all doubtful, excepting the preparations of Iodine, and of these the Iodide of iron in leucophlegmatic habits, ending in anasarca affords the most likely hope of relief, but of this our experience is still deficient.

Dislocations and Sprains. — Only one case of dislocation, that of the humerus into the axilla, occurred.

Delirium Tremens. — Five admitted, one of which proved fatal. The casualty occurred in a Portuguese of very dissipated habits. On the third day after being received into Hospital, he was in a highly excited state, having been unwell for several days previous, during which period he had taken no food, but had drunk large quantities of brandy; tongue was of a dull red colour. He had great pain and tenderness in the region of the liver and stomach, occasional vomiting on taking fluids; opium, combined with antimony and camphor, was freely given at intervals and seemed for a time to be beneficial. Ultimately, however, great restlessness and debility supervened, with cold clammy perspirations when stimulants of brandy and ammonia combined with anodynes, were given, and blisters were applied to the back and stomach, and sinapisms to the legs and feet, but without any good results. He had previously suffered several times from the same complaint, and had been once or twice in the European General Hospital. In one of the successful cases an East Indian, a printer, who was greatly addicted to drinking and in whom all the symptoms recorded above existed, though they had been of shorter duration, the gastric affection was less severe, and the constitutional powers less impaired. In this case 78 grains of opium and 27 grains of morphia in tincture were taken in nine days before the symptoms entirely yielded. In two of these nine days, about 8 grains of morphia were given daily before sleep was induced, and of the opium 18 grains were exhibited in one day and 39 grains in another. This exemplifies the peculiar state of the nervous system in this complaint and

shews the great extent to which it is sometimes necessary to exhibit anodynes to maintain and at last gradually restore its functions. In some instances of this disease the cold affusion was found an auxiliary.

Dysentery. — One hundred and twelve admitted. Fifty-one deaths occurred, chiefly in patients who came to Hospital either in the advanced stage of the acute or in the chronic form of the disease. In the first, calomel and opium, leeching, blisters, fomentations, blue pill, or the hydrarg. cum creta, combined with ipecacuan. and gentian extract, or with Dover's powder, or the acetate of lead and opium, or the chalk and opium powder, with anodyne enemata, or opiate suppositories, were the means used. In the latter, sulphate of copper and opium was found the most valuable remedy that could be used, in doses of from 1 to 3 grains of the former and 2 to 5 or 6 grains of the latter, thrice daily, or even more frequently in extreme cases. In the successful cases general or local blood-letting or both. Twining's combination of blue pill, ipecacuan. &c. calomel with ipecacuan. and opium, and when much blood was voided, the acetate of lead and opium from 2 to 6 grains of the former, and 3 to 6 of the latter with diluted vinegar as drink to prevent the acetate passing into the state of carbonate in the bowels. These with the application of blisters, followed by light, astringent, bitter tonics during convalescence, nourishing diet and Port wine, were the principal means employed.

Fractures. — Thirty admissions occurred under this head, six of which terminated fatally. These were compound and comminuted fractures of the bones of the lower extremities, attended with much constitutional irritation, and leaving no alternative but operations to which the patients would not submit until it was too late. In one case affection of the brain occurred after the accident, and which, though relieved, by the usual depletory means, carried off the patient. Inspection of the body, however, disclosed the cause of death to have been disease with hypertrophy of the heart. There were no symptoms during life to indicate the existence of this disease. Several amputations were performed. One at the shoulder proved quite successful.

Fever Remittent. — Forty-five admissions; sixteen deaths. Of these one died on the first day, three on the second, one the third, one the fourth, two the fifth, two the sixth, one on the eight, two on the ninth, one the thirteenth, and one the twenty-fifth. Several of these cases were people brought from off the public roads by the Police. In most of them the head, stomach, liver, or chest were more or less affected.

The treatment pursued was blood-letting, general and local, according to the urgency of the symptoms, purgatives and enemas, nauseating doses of tart. of antimony and ipecacuan., mercurial and saline diaphoretics, blisters, cold lotions to the head, and sponging, tonics of bark, quinine and wine, as soon as they could with propriety be administered.

Intermittent Fevers. — One hundred and ninety-two admissions, five of which terminated in death. These had long suffered from the disease, which was complicated with organic affection of the liver, lungs, spleen, or bowels. They had been dissipated or were affected with syphilis.

The treatment consisted in the administration of emetics, saline diaphoretics in pyrexia, and bark or quinine during apyrexia; leeches and blisters were also sometimes employed. And when the spleen alone was enlarged, spleen mixture was found a very valuable remedy and was much used.

	Admitted.	Died.
Hepatic Affections. Acute.....	15 ...	4
Chronic	17 ...	8

Two of the cases were complicated with jaundice; four terminated in abscess or diseased bowels. The chronic generally ended in abscess. In the acute cases the treatment consisted of general and topical blood-letting; mercurial and saline purgatives, mercury so as to affect the system, and blisters, and after the acute symptoms had subsided, mild tonics and moderate diet were allowed. In the chronic cases topical bleeding, blisters, rubefacients, laxatives, mercurial alteratives, blisters and attention to diet.

Inflammations External.

	39 Admitted.	Died 3.
Abscess of the Hand.....	2	...
———„——— of the Legs.....	2	...
Bubo Simple.....	3	...
Cynanche Parotidea.....	2	...
Erysipelas.....	1	...
Erythema.....	1	...
Furunculus.....	7	...
Inflamed Arm.....	2	...
——„—— Foot.....	1	...
——„—— Knee-joint.....	8	1

Inflamed Jaw	1	...
——,,—— Scrotum	4	1
——,,—— Testicle	2	...
Inflamed Thigh	1	1
Phlegmon	2	...
	39	3

Of the fatal cases one was from sloughing of the scrotum; one from suppuration and disease of the knee-joint, and the third from extensive suppuration below the fascia lata of the thigh, extending up from above the knee to the trochanter major. The adhesive inflammation was not excited, nor the cavity of the cyst destroyed in consequence of disease of the thigh-bone, pieces of which once or twice exfoliated. The result was the frequent collection and discharge of vast quantities of pus under which the patient sunk and died. In all the three cases suppuration was established before admission. The treatment consisted of rollers regularly applied, poultices, fomentations, anodynes, tonics, wine and generous diet.

In the successful cases, general and topical blood-lettings were had recourse to, and poultices, cold and warm lotions, blisters, fomentations, diaphoretics, mercurials, &c.

Cephalic Inflammations.—There were five admitted, and one death from inflammation of the membranes of the brain in a Portuguese. This case of meningitis is rather singular, as supervening suddenly during quotidian fever. The latter was of a very intense character, but regular in its periods of accession. These accessions, previous to admission and for some days afterwards regularly recurred in the afternoon. After free purgation, bark and quinine were resorted to but did not succeed in checking the disease. Headache, of which he had more or less complained, during the hot stage becoming more severe, the tonics were abandoned, and as venous congestion seemed to have occurred, he was bled from the arm and mercurial combined with saline purgatives administered, together with antimonials, and leeching to the temples. These measures seemed to afford some benefit, when about the seventh day, the patient became suddenly insensible, and stertorous breathing followed with contraction and perfect insensibility of the pupils. Blood was again immediately drawn from the arm, drastic vegetable purgatives and enemata given. Cold to the head, and mercurial frictions were used without success, and he died on the third day after the commencement of the attack.

A post mortem examination disclosed the existence of violent inflammation of the meninges of the brain with excessive serous effusion between the piamater and brain. This and the arachmoid were raised from the brain, much thickened in structure and easily separated from each other by the fingers. The effusion, extended into the spinal canal from which, when depressed, fluid oozed copiously into the base of the skull. The surface of the brain was softer than usual. The lateral ventricles did not contain more than the usual quantity of fluid. The two successful cases were both of phrenitis cured by blood-letting, both general and local. Purgatives, calomel combined with antimonials, and diaphoretics.

Thoracic Inflammations. — Fifty admitted. Pneumonia 20; Bronchitis 20; Catarrh 2; Pleuritis 7; Carditis 1. Of these died of Pneumonia 13 within twenty-four hours after admission; two died after two days, five after three days, one after four, one after five, one after eighteen, and one after twenty-seven days.

From bronchitis three casualties occurred. In four days one, in fifteen days one; in twenty-one days one. Of pleuritis only one fatal case which took place on the fourth day after admission. Of carditis one died in the third month. Two of those included as pneumonia died of diseased heart. The case of the first, Seedee Joyee, is appended. The other patient had all the symptoms of severe rheumatism, but a post mortem examination disclosed the heart to be enormously enlarged and to have been the cause of death. The case borne carditis was in a Purwaree, a discharged sepoy, who had long suffered from the disease and who was repeatedly relieved from acute or subacute attacks by bleeding general and topical, blisters, antimonial nauseants, hydriodas potassæ, and digitalis; but he ultimately sunk. After death the heart was found enlarged and hypertrophied with adhesions of the pericardium to the heart's surface.

General Treatment. — Blood-letting, general and topical, blisters, and rubefacients, purgatives, tartarized antimony in large doses. Expectorants, and when the more urgent symptoms subsided, calomel in small doses combined with ipecacuan. James' powder, camphor, extract conii or ganja. The latter in doses from one to four grains seems to be a most useful adjuvant in procuring rest in cases where the nervous and vascular systems are irritable and excited. Ultimately, bitter tonics of quinine or gentian were given.

Abdominal. — Three admitted; all peritonitis; no deaths. The usual treatment was adopted.

Ophthalmic Affections.—Acute thirteen admitted of various forms and many of great severity. The usual antiphlogistic treatment was pursued during the inflammatory stages, followed by caustic and anodyne remedies.

Ophthalmic Inflammations, chronic.—Twenty-eight of various forms of the disease were admitted. All successfully treated.

Rheumatism. — Two hundred and forty-two admitted and fifteen casualties. The latter occurred in worn out and broken down constitutions. Organic disease of the liver or lungs and diarrhœa were generally the sequence of the primary disease and cut off the patients. In addition to the common routine of remedies the extract of hemp or ganja, was used with good effect in mitigating pain when very severe, and relieving the nervous irritability without any of the unpleasant results arising from opium.

Spleen Diseases. — Eight admissions all successfully treated. In one case the spleen was enormously enlarged. This viscus is connected, in a remarkable manner, with the stomach by the vasa brevia, adhesions and ulcerations may have gradually taken place between the two organs, as the patient was suddenly seized with severe vomiting of dark grumous, clotted blood, mixed with shreds of coagulated lymph. This pulpy substance seemed to be the dissolved spleen and was brought up to the extent of several pounds, after which the viscus was suddenly reduced to its natural size, and the patient left the hospital convalescent. This is supposed to be the only instance known in this part of India, of diseased spleen bursting into the stomach.

Syphilitic Affections. — Primary, one hundred and eighty admissions, seven deaths, chiefly among females from sloughing of the genitals, presenting a most disgusting state of disease. A few males died from a complete breaking up of the constitution.

The general treatment consisted of purgatives, alterative mercurials, hydriodate of potash, lotions of the nitrate of silver, or sulphate of copper, or zinc. In the extreme cases, cordials of ammonia, camphor, opium, quinine or bark, and wine were administered with the application of turpentine oil alone, or diluted, cataplasms, nourishing diet, and when diarrhœa supervened, astringents were used.

Small Pox. — One admitted; one cured.

Scurvy. — Fifty-six admitted; three deaths, occurring in individuals who were in an extreme state of debility with diarrhœa. Two were receiv-

ed from the Bazar and one from the harbour, an Arab. Several severe cases from Aden, all recovered.

The treatment consisted of nourishing diet and vegetables. The vegetable acids and the following draught given three or four times daily.

℞. Pulv: cinchon: ʒi Lime juice ℥iv arrack and syrup *a a* ℥ss Tinct opii vel Tinct. Mur. Morphiæ ʒss ʒi m.

This plan was found very effectual. In some cases where the stomach was irritable, quinine was substituted for the bark, and when fever was present, which was generally the case in the afternoon, saline diaphoretics were used, and when the limbs or joints were painful, a few leeches repeated when necessary, and frictions with anodyne stimulating liniments to the stiff and painful limbs. Fomentations and tepid baths were also employed.

Ulcers	Admitted	Died
Scorbutic	16	
Simple	79	2
Sloughing	11	7
Irritable	3	

One hundred and nine admitted, nine deaths, all occurring in subjects where the disease had become incurable from the state of the general habit, or from the parts becoming so much involved as to prevent amputation. At an earlier stage of the disease when operations might have been performed with success, the patients could not be persuaded to submit. In some of the cases diarrhœa supervened and carried off the patients. One of these sufferers, an old man, was admitted from the Dhurumsalla. Extensive ulceration of one foot existed with induration and discoloration, the consequence of a leprous diathesis; purging ensued and destroyed the patient. Another individual, having extensive sloughing of the foot and loss of the toes accompanied with necrosis of the tarsal and metatarsal bones, consented to amputation, but on the table, his courage failing him, he was removed. Scurvy of a most severe character, in this case, supervened, resisting all the remedies, and notwithstanding the greatest attention the patient died, after enduring the greatest suffering, in ten days after the septic symptoms appeared.

The treatment in the severe cases, consisted of warm turpentine and resinous dressings, creosote and cataplasms, lotions, &c. anodynes, cordials of wine, ammonia, camphor, &c. Vegetable diet, quinine, bark, acid, and gentian were also employed and astringents. The chlorides of lime and soda were found highly useful in correcting the fœtor from these ulcers.

In all the scorbutic ulcer cases the antiseptic tonic draught, and gene-

ral treatment referred to in scurvy, were found the most useful means for improving the general constitution, and indirectly, the ulcers.

Wounds. — Contused one hundred and sixty-one admitted; incised, and lacerated forty-three, punctured four ; Total two hundred and eight. Discharged from these two hundred. Died eight. The casualties were almost all cases requiring judicial investigation, and several of them not devoid of interest. In the middle of the night of the 19th of April a young Brahmin was brought to Hospital. From jealousy an assassin plunged a sharp pointed creese, while his victim lay on his belly, close to the right side of the spine below the eighth rib, completely dividing the ninth, and forming a long punctured wound in the inferior lobe of the lung. In this case it was remarkable to observe the beneficial effect of repeated blood-letting. The intense feeling of suffocation was always relieved by it, and life prolonged for several days.

Other Diseases. — Under this head a number of diseases are arranged, amounting altogether to one hundred and sixty-eight. Of these twenty-seven died. Among the latter were some cases of gangrene. One was a woman, who while coming from the Bazar, fell down and broke a bottle of oil which she was carrying. One of the pieces of glass divided the radial artery. In vain the natives attempted, by every means in their power, to restrain hemorrhage, and as a last resource, bandages were tied as tightly as possible round the arm. Enormous swelling and mortification ensued, extending nearly up to the shoulder. The limb was removed on the 10th September, but it was too late ; the irritative fever continued and destroyed the patient.

In another case, a most horrible object, was taken out of a ditch, left there no doubt to perish ; sphacelus of the penis ; involving the whole of the scrotum had taken place ; the parts were a perfectly soft gangrenous mass. The patient was pulseless and almost lifeless. The mortified parts were immediately removed ; the natural passage of the urethra was discovered and the accumulated urine drawn off. Yet notwithstanding the most assiduous employment of ammonia and the diffusible stimuli, the powers of life could not be restored.

The number of amputations has been considerable, but have been performed in cases which almost precluded much hope of success. Owing to the prejudices of the natives they seldom consent to undergo an operation, until the powers of the constitution are almost exhausted from the local disease, and the blood has become quite corrupted. One case of amputation, performed under these adverse circumstances at the shoulder joint,

proved quite successful. Under the head of "strangulated Hernia" an equally satisfactory termination under similar disadvantages followed. The patient was sent to the Hospital after the failure of all the means of relief employed. The sufferings were intense: the pain as if a cord were tied tightly round the upper part of the bowel, was acute, accompanied with rejection of feculent matter from the stomach. Previous to admission, reduction, by the taxis, had been attempted in vain, and again tried in Hospital and to render it successful tobacco enemata, large bleeding, the warm bath, &c. were employed. At last the patient consented to an operation, the stricture was removed, and the strangulated portion of the bowel found highly inflamed. Owing, however, to the unmanageable character of the man, a stout lascar, and the violent struggles that he made, a great quantity of the bowel was protruded. The whole was at length reduced, and the patient, in a few months completely recovered. Under this head is also ranked, *Poisoning.* Twenty-eight cases have been admitted. These have come into Hospital frequently in a short space of time, thus conveying an impression that the poisoning was systematically carried on by a gang of thieves, who reduce their victims to a state of insensibility, and then rob them. The poison chiefly used is the datura stramonii, the seeds are powdered and given in sweetmeats or in the curry of the natives.

The patients after recovery generally give the following account. That they had been invited to partake of sweetmeats by a stranger on the streets, which after they had eaten, insensibility followed, when they believed they were plundered. The symptoms have been already described in other reports. The patients go through a number of ridiculous gesticulations, and are constantly rising up and sitting down. Strong emetics, the stomach pump, and the use of douches, constituted the treatment.

Under the Head *Tetanus* three cases have occurred. On this disease much conjectural matter might be written, and some endeavours made to point out the intimate connection of the neuroses, but the pathology of this class is still so very obscure that facts can only be admitted in an Hospital Report.

Allusion, however, may be permitted to the remedies. The extract of hemp has been found highly beneficial in tetanus, and more or less so in abating and soothing the severity of the symptoms in all the class of spasmodic diseases, whether affecting the animal, natural or vital functions. Dr. William O' Shaughnessy has perhaps recommended this remedy in too flattering terms in tetanus. It has been extensively used in this disease in the Native General Hospital, and for the mode and results of its employment, reference must be made to cases published in the Bombay Medical

and Physical Society's Transactions. * It will most likely be again brought to the notice of the Superintending Surgeon in future reports, so as to assign its proper place in the materia medica.

In conclusion it may not be irrelevant to observe that nineteen cases of Inquest have occurred at the Native General Hospital, all affording much grave matter for remark, but to which attention cannot now be directed.

* No. iv.

Article III.

Annual Medical Report of H. M. 2d or Queen's Royal Regiment, from the 1st of April, 1841, to the 31st of March, 1842. By R. H. A. Hunter, Esq.

Presented, August 1842.

Station, Deesa. — Lat. 24° 12′, Long. 72° 25′ East. Height above the level of the sea, under two hundred feet. Distance from the sea, one hundred and twenty miles North-East: no hills intervening. Winds variable at all seasons, but in the cold months chiefly from the North and West. In the hot, South and South-West, occasionally with volumes of dust. In the rains, Southerly. Rainy season from the middle of June to the end of September. Average annual fall, eight to twelve inches. The past season was unusually wet.

Thermometer's highest diurnal range in April, May, and beginning of June, 92° to 101°. Lowest at 6 A. M., 74° to 89°. Highest in July, August and September, 80° to 96°. Lowest at 6 A. M., 75° to 85°. In October, 83° to 92°, and 65° to 79°. In November, December and January, highest 69° to 88°. Lowest, 49° to 78°. February, 62° to 87° (from the 12th to 20th extremely low) and 49° to 66°.

The cantonment at Deesa, three miles from the village of that name, is situated upon two or three pretty regular elevated ridges on the left bank of the Bunass river, that allotted to the 2d or Queen's Royal being the farthest removed and the highest, upon a vast, arid, semi-desert looking plain, bounded to the North-East by an irregular chain of mountains, of which a few low and detached, approach within six or eight miles of the cantonment. This is during the hot season, for in a favorable year in the rains, the whole face of the country presents a rich verdure of pasture and grain, interspersed round the different villages with clumps of high trees.

There are no jungles of moment in the immediate vicinity, but plenty all round, nearly at a distance of from three to six miles. In these as indeed every where uncultivated, the grass shoots up very rank during the monsoon, even on what in the hot weather seemed little better than burn-

ing sand. Very little of this is cut, so that towards the end of the year it becomes trodden down, withers and decays, and finally mixes with the soil.

The soil is a light colored mud naturally and deep, but where much cultivated, partakes more or a less of a darker hue. The river at present scarcely deserves the name, though once I believe a tolerable stream during the rainy season. In its bed are several swamps, with mud, rushes and long grass, but they are two insignificant, perhaps, and far removed materially to affect the salubrity of the cantonment.

The *Barracks* occupied at Deesa by the 2d or Queen's Royal, about a mile South-East of the river and forty feet or so above its level, consist of ten substantially brick-built and tiled long rooms, detached in two parallel lines facing the South-West. Two of these, new ones, are each 180 feet in length, the others 156 by $23\frac{1}{2}$ in breadth, and $14\frac{1}{2}$ in height of walls, exclusive of two small rooms, nine feet by nine walled off at either end. There are small rooms also walled off, the corners of the verandas for Serjeants &c. a little detached to the left, three parallel rows of tiled huts contiguous for the married people, in all about forty of them.

The long rooms have front and rear verandas, and are well ventilated by the doors, windows, and large oblong openings in the roof, surmounted with wooden tops, rendered waterproof by tarpaulin.

Upon the whole, the barracks are well adapted for the accommodation of 800 or 900 men, but for the present strength of the regiment, in a climate of this kind, where little aid is afforded to the ventilation from difference of temperature without and within the Barracks, they are too small. This in the hot weather, however, is in some measure obviated by part sleeping outside under tents, of which two rows without walls are pitched immediately in front.

The *Hospital* is also a very substantial building of the same material as the Barracks, but much too small for the present strength. It has four wards fifty-five feet by twenty-five, and two twenty-five feet square, all in one line with a veranda in front and rear, nine feet in breadth. The front veranda is built in, and having numerous venetians and glass windows, is generally used for convalescent wards. With iron bedsteads the body of of the Hospital might accommodate one hundred patients, but with the present clumsy wooden ones seventy or eighty render it very crowded.

Water is abundant at all seasons from wells at a depth of from sixty to eighty feet, and of a quality very superior. There is a well within the Hospital inclosure, and three between the Barrack rooms, all wrought by means of bullocks.

Diet and Rations. — No salt provisions are used, there being always plenty of beef or mutton in the market, though the former perhaps is of inferior quality. Vegetables however are scarce, but more on account of the expense of raising the water for irrigation, than from the climate or soil. All kinds of European vegetables grow very luxuriantly in the cold season, and even potatoes if care be taken to procure good seed. These last, however, are generally small, and only to be had from January to June.

Duty and Employment. — The duties have been comparatively light amounting to little more than Regimental Guards, Parades, and Drills, and therefore can have had little extraordinary influence over the health of the corps. The Light Infantry drills in the cold season, however, generally send a number of the old soldiers into Hospital, with stitches, pains in the chest and shortness of breath, which arises from few of the class being altogether free from some degree of chronic bronchial lesion, or "broken wind." (These constitute the greater portion under "catarrh," in the return: common catarrh is very rare.)

Intemperance. — With regard to this, it is sufficient to say there has not been a case of "Delirium Tremens," the best criterion, with Head Quarters during the year. One invalid, however, died of it in Colaba, Bombay.

Average Strength.—The average strength at Head Quarters has been 893; and the deaths 17, but as we ought perhaps to add the invalids sent down to Bombay, in the end of October, with diseases which may be supposed to have been contracted at Deesa, the average will be 918 and the deaths 25, exclusive of two invalids for epilepsy, one of whom was drowned on the way down whilst bathing, and the other "found dead," at the Presidency.

But if we include a detachment of recruits at Bombay during the rains, the average strength in the country will have been 966, and the deaths 33, exclusive of the two invalids already noticed.

Invalids, 50 left this for the Presidency, of whom ultimately embarked for England 28. Two were pensioned in the country, and the rest are either dead, or have returned to Head Quarters.

Remarks as to the Principal Classes of Diseases, &c.— On a reference to the return of admissions and deaths, section IX, it will be observed by far the greater portion of the sickness and mortality has

been occasioned by fever and its sequels, and that chiefly of the gastro-enteric and gastro-hepatic species or autumnal remittent, which though not of a fatal character was very prevalent last year, owing, it was supposed, to the unusual wetness of the South-West monsoon. It is true, a very great proportion of the deaths occurred in December, but this we attribute to the sudden setting in of the cold season, urging on the hepatic complications to abscess, and the gastro-enteric to dysentery, as we have elsewhere remarked, the change being equal to that from a hot to a cold climate. Relapses had been extremely frequent in October and November, and almost all the fatal cases were of that description.

The cerebral fever of the hot season was much milder however last year, which may in a great measure be attributed to the comparatively moderate temperature, six to eight degrees below that of the preceding, and the cleaner state of the Barracks and their vicinity, for it must be remembered, in 1840, these lines had been lying waste for nearly eighteen months previously, and that the mortality occurred soon after the arrival of the Regiment. Nevertheless we had a few very threatening cases in the beginning of June just before the rains commenced, one patient indeed lay comatose for several hours during the first or second exacerbation. One also became comatose in November, within the first twenty-four hours, and died the following night, but on the post mortem examination, the only local affection found was an intense gastro-enteritis with the caecal valve very much resembling the everted eyelids in acute purulent ophthalmia. A similar case occurred in March 1841, but in this the patient lingered upwards of a fortnight, comatose. Nothing very remarkable was observed in the brain, but the caecal valve was thick, fleshy and ulcerated, and there was a large ulcer in the stomach nearly penetrating. One died of of gastro-catarrhal fever in April, and almost universal bronchitis and several ulcers at the extremity of the ileum, and one in May, of similar origin coupled with gangrene of the lower left lobe of the lung. This last had been long in hospital, and was greatly reduced.

In December, we had two or three cases complicated with pneumonia of a lower lobe, and another proved fatal, gastro-hepatic, accompanied with purulent infiltration of the upper right lobe. This month also the hepatic and dysenteric were much mingled, at least the fatal cases, ulceration of the intestines more or less general, and abscess of the liver conjoined, in almost every one of them.

Of pure dysentery or colitis, at least in a severe form, we have scarcely had an instance. One fatal case in October, in an old soldier, was evi-

dently accompanied with hepatic disease, the others occurred at all seasons indifferently and may possibly have been of febrile origin.

One admitted in September, under enteritis, from the acute pain and tenderness in right iliac region, turned out a case of psoas abscess, of which the patient ultimately died, in December. The abscess was found to extend from near the trochanter minor to within the thorax, but behind the pleura. The transverse processes of the vertebræ and spine of the ilium were extensively corroded, and the sac was lined with a dark colored membrane, which also invested the large vessels, leaving their proper coats underneath healthy.

The bellies of the psoas and iliac muscles had disappeared, and the abscess was nearly bursting posteriorly through the lumbar region. The sac, colon and ileum, were firmly adhering anteriorly, with thickening and matting of the peritoneum.

Consumption. — The two fatal cases of this had been in Hospital the greater part of the year, and were in consequence invalided. Both were old soldiers. They died soon after their arrival at the Presidency. The other of pulmonic disease as per returns, was a sequel of fever.

Brain, Diseases of. — Of the death under cerebral disease, one was an invalid for idiocy. He had two or three paroxysms of tertian ague before leaving Deesa, followed by purpura, and died near Cambay. Another invalid died of delirium tremens at the Presidency, and the third was a case of apoplexy or coup de soleil at Colaba, of the recruits there during the rains.

Here too ought to be noticed the two epileptic invalids already alluded to, who died out of Hospital.

Cardiac and Aortic Disease.—Under this head, there has only been one death this year. Another, however, has been invalided, and two have died since; see cases, Section, XI. When we look over the returns for the last two years, we cannot fail to be struck with the diminished mortality by this class of diseases. The cause, however, is sufficiently obvious when we look to the age and period of service of the men now in the corps, and the comparatively light duty. It was no doubt the frequent and protracted Brigade drills at Poona, aided by the still faulty dress, which rendered these diseases so remarkably fatal at that station, and for some years afterwards.

Having now given a general outline of the diseases of the past year, we may enter a little more minutely into the nature of the *fevers*, the princi-

pal class, with a view to elicit something relative to the most successful practice or mode of treatment, and in doing so shall contemplate them under three grand divisions, taken from the more prominent symptoms and the season of the year, at which they more particularly prevail. Not that we consider them, distinct species. On the contrary we conceive them to be essentially one, and the grand cause "Malaria," the same in all; the season of the year and particularly predispositions only creating variety.

The first we shall call the *cerebral.* It is that more peculiar to the termination of the hot season. It commenced last year, on the 22nd of May, and though once or twice partially checked, apparently by a reduction of temperature immediately succeeding to heavy dust storms, upon the whole increased in frequency and severity, till rather abruptly put a stop to by the setting in of the rains, about the 16th of June.

This fever generally of a remitting or distinctly intermitting type, was characterized in the hot stage, by flushing redness and heaviness of the eyes, in some cases from the first with a degree of stupor, intense burning heat of skin, with an earnest desire for the cold affusion, and violent headache occasionally in a few hours gliding into coma or apoplexy. Never having witnessed a fatal case of this fever at Deesa, having been absent with the 17th Regiment, when it was so fatal in the Queen's Royal in 1840, my remarks as to its nature are chiefly founded upon its symptoms.* There may be gastric complications also, or these may be the primary and the cerebral symptoms merely secondary, from the predisposition given by a high temperature. Indeed this was the case in two fatal instances similar apparently, but at a different season of the year, and this in the treatment has been kept steadily in view.

In this fever I believe the best practice to be a moderate venesection on admission, 12 to 24 ozs., according to the "tolerance," age and constitution of the patient. Large bleedings I conceive to be positively injurious in all the fevers of Deesa, by creating or increasing the congestions. A purgative of calomel and pulv. jalap. c., to which I add pulv. ipecacuan. grain i. in lieu of antimonial or James' powder on account of the gastric complications, and afterwards a plain solution of the sulphate of magnesia. Leeches to the temples or head generally, cold affusion, cold sponging, cool drinks, saline mixture with nitrate of potass or small doses of Seidlitz every two or three hours, &c., and on the first remission sulphate of quinine. Calomel grains iv. or pil. hydrarg. grains x. every night, resuming

* Since writing the above, I have met with a fatal case. Venous congestion in the head, &c. Stomach and bowels *quite* healthy.— June 1842.

the sulph. magnes. during the exacerbations, or the saline mixture or Seidlitz according to circumstances. The quinine, however, is the grand remedy, and it would be surprising, perhaps, if we had the means of comparing the difference of mortality by these fevers before and since the general introduction of this medicine. We generally begin with grains iv. to vi. where the previous exacerbation has been alarming, whatever be the local complication, and direct our remedies to that, totally independent of the quinine.

The second we have called the *gastro-enteric* or autumnal remittent. This commenced with September, a little later than usual at Deesa; reached its acme in the beginning of October, during the first three days of which, 25 cases were admitted; declined rapidly after the 12th of that month, and by the 20th had all but ceased in its primary type form, though relapses and re-admissions of an intermitting type continued frequent for two or three months after.

This fever was usually ushered in with languor and debility, shivering, or alternate flushes and chills, with a feeling of distension, fulness, and tenderness at epigastrium, or in front of one or other cartilaginous border, sometimes with flushing, redness of the eyes, and other cerebral symptoms; coma, convulsion, &c.; skin hot; bowels confined or relaxed; pulse 120 to 130 or upwards; tongue pretty clean and moist, but in the bad cases more often covered with a white frothy slime. The greater number were admitted at some period of the day or towards evening in the hot stage. Next morning there was a more or less perfect remission, followed, at from 9 to 11 A. M., by exacerbation, and again towards evening by remission. The local or gastro-enteric symptoms also remitted more or less perfectly. Sometimes, more particularly latterly, these exacerbated without the fever in the form of acute pain and tenderness or diarrhœa.

In these fevers it is absolutely necessary to have constant recourse to the physical signs, otherwise the gastritis is almost certain to be mistaken for pulmonary disease. Whether it is from the pain caused by the depression of the diaphragm, I know not, but they refer the seat of it to their chest, which taken with the dyspnœa or panting is sure to mislead. And the enteritis for hepatitis or splenitis. Here they complain of the side, whereas on examination it is found to be in front of that, and that the part on percussion sounds "plus gastric." A clear tympanitic sound may generally also be elicited over all the left hypochondrium, and along in front of right cartilaginous border, whilst from the sixth rib upwards it is distinctly thoracic. In the cold season however, hepatitis is apt to supervene, but I have found only one case of enlarged spleen, and that was

in a recruit who had the fever repeatedly also in Bombay and on the march up.

In the treatment of this fever, we find the tolerance of venesection, the patient sitting up in bed, scarcely exceeds 8 or 10 ozs., except in such cases as are complicated with cerebral symptoms, when 16 to 20 ozs., may be abstracted before any tendency to deliquium is evinced. In all, except the last, we are persuaded venesection is injurious, yet these cerebral symptoms are so insidious during the first or second exacerbation that we question whether it is not the safer rule to bleed in every case on admission, to the extent of the tolerance, and particularly with young soldiers of a full habit. Nevertheless it must be admitted, the greater proportion of the deaths by hepatic abscess and dysentery as sequels, have occurred where antiphlogistics, and more particularly bleeding, have been most freely employed, making every allowance during the last year, not less than as $2\frac{1}{2}$ or 3 to 1.

Comparing the same classes during the autumnal months, we find the proportional number of days in Hospital to have been as $11\frac{1}{2}$ (former) to $9\frac{1}{2}$, but the relapses nearly equal, except in October, when they were also much in favor of the very moderately antiphlogistic nearly as 2 to 1. The only fatal case of fever however, properly as fever, was of the latter class, delirium rapidly followed by coma, convulsion, and death : the complication, an intense gastro-enteritis. We ought especially to be on our guard in this fever when delirium supervenes at an early stage. Free leeching, cold affusion, &c. can alone save our patient from coma or convulsion. The last by itself is perhaps not very dangerous, but when preceded by coma the case is almost hopeless.

Blisters too we conceive to be highly dangerous when there is any tendency to abscess of the liver. Moderate leeching in these cases, fomentations, &c.; in fact a soothing method of treatment, is by far the best.

The third variety we have elsewhere called the *enteric* but it might be as well characterized perhaps as being of a distinctly intermitting type, and appears to be a continuation or relapse of the autumnal remittent. In our statistical review of last year, we said hepatic complications were rare compared with Belgaum, a similar climate in the cold season. The cause of this unusual proneness to abscess of the liver I know not, but certainly that, with gastro-enteritis or dysentery, as sequels of fever, has been the most fatal of all diseases. We have had no marked case of primary hepatitis however, and comparatively few of dysentery. Neither have we had any fatal case, of fever simply as fever, except one on the 1st of April belonging to last year rather, and one in November, and even these may

be said to have proved fatal solely through their complications. In all the others the fever had been overcome a considerable time before death.

With regard to the treatment of this variety, we have little to add to what we have already advanced. Being of an intermitting type, and generally complicated with enteritis, it requires like the last a moderately antiphlogistic soothing mode of treatment, and quinine. In these sequels we have found quinine and opium, with other remedies according to circumstances, of the most marked benefit.

Here the same necessity exists of taking care not to confound gastro-enteric disease with pulmonic, and more particularly as we have seen, a few cases, in the cold season, are liable to be complicated with a partial pneumonia.

No. 1.—*Return of Admitted, Died and Invalided, of H. M. 2d or Queen's Royal Regiment, from the* 1*st of April* 1841, *to the* 31*st of March* 1842.

Diseases. Strength, 966.	Admitted.	Died.	Invalided.
Fevers (not Eruptive)	688	10	"
Diseases of the Lungs	131	3	3
——— of the Liver	16	3	"
——— of the Stomach and Bowels	398	13	3
——— of the Brain	42	3	6
Dropsies	6	"	"
Rheumatic Affections	93	"	2
Venereal	152	"	"
Abscesses and Ulcers	112	"	"
Wounds and Injuries	131	"	3
Punished	11	"	"
Diseases of the Eyes	32	"	"
——— of the Skin	41	"	"
All other Diseases	116	1	11
Total	1969	33	28

No. 2.—*Monthly Abstract of Admissions under Fever, and of Deaths, under that and its sequels, at Head Quarters, Deesa. Strength* 893. (*Corrected.*)

Fevers.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.
Intermitting Fevers	"	"	"	"	"	3	11	17	27	"	"	"
Remitting and Continued	17	30	91	28	34	"	"	"	"	20	21	27
	"	"	"	"	"	63	132	47	25	"	"	"
Total	17	30	91	28	34	66	143	64	52*	20	21	27
Of these Re-admissions	"	"	"	"	"	"	21	41	22	"	"	"
Deaths (Fevers and Sequels	3	1	"	"	"	"	1	1	8	"	"	"

* A Detachment of Recruits joined on the 6th December, many of whom had Fever.

No. 3.—*Abstract of Deaths at Head Quarters, from Fever and its sequels, shewing the specific complications of each, with the results of post mortem examination.*

Disease.	Died.	Complications.		Autopsical Results.
	"	Gastro-Enteric . . .	1	Inflammation of stomach and bowels ; died in 36 hours.
Fever .	"	Gastro-Hepatic. . .	5	Ulceration of bowels and hepatic abscess in all. In one purulent infiltration, lung.
	14	Gastro-Catarrhal . .	2	Ulceration of bowels ; one gangrene, lung ; one bronchitis.
Sequels.	"	Enteric	4	Ulceration of bowels; one with peritonitis.
	"	Hepatic	1	Hepatic abscess ; bowels not examined.
	"	Purpura & Gangrene.	1	Purpura and Gangrenous sores.

To shew whether the sickness and mortality has most affected young soldiers or those advanced in life, the long resident or newly arrived, the remaining tables have been framed. The high ratio of mortality amongst recruits of the first year is very striking, and that it is not accidental we have proved by collecting all who came out originally with the Regiment, together with all those who have joined subsequently as recruits, 2099 in the aggregate, which gives 60.1 per 1000 of strength, instead of 58.8.

It would be wrong however to attribute to non-acclimatization, for it may be sufficiently accounted for, from the first six months residence of the great majority of them having been at Colaba, Bombay, during the rains, and afterwards from many of them having had to march a long way to join their Regiments. Those causes, to our knowledge, have more than doubled the ratio.

No. 4. — *Abstract, shewing the composition of the whole Regiment, classed according to the period they have been in the East Indies, as well as the relative number of Admissions and Deaths of each class.*

Class.	Strength.	Admitted.		Died.	
		Total Admitted.	Ratio per 1000.	Total Died.	Ratio per 1000.
Under 1 Year	102	203	1990	6	58.8
1 to 2 Years . . .	410	800	1951	11	26.8
2 to 3 Years . . .	150	332	2213	2	13.3
3 to 4 Years . . .	2	1	500	"	"
4 to 5 Years . . .	17	20	1176	"	"
5 to 6 Years . . .	29	47	1620	"	"
6 to 7 Years . . .	40	51	1275	1	25.
7 to 17 Years . . .	297	423	1424	13	43.8
Total . . .	1047	1877*	1792	33	31.5

* Accidents, &c., not peculiar to climate, not included in this Table.

No. 5. — *Abstract shewing the Diseases by which the mortality has been occasioned, and according as it has occurred in those above or under seven years service.—(Corrected.)*

	7 to 17 Years. Strength 297.		Under 7 Years. Strength, 750.	
Died of	Total Died.	Ratio per 1000.	Total Died.	Ratio per 1000.
Consumption	2	6.7	"	"
Cardiac Disease	1	3.4	"	"
Fever	2	6.7	8	10.7
Hepatic (Abscess)	5	16.8	3	4.
Stomach and Bowels	2	6.7	7	9.3
Brain	1	3.4	1	1.3
Other Diseases	"	"	1	1.3
Total . . .	13	43.7	20	26.6

We have not given the ages in the last two tables, but if we take that of those who came out with the Regiment at 22 years on their arrival, and that of those who joined subsequently as recruits at 19 or 20, we shall have the ages as near as possible by adding the number of years in the country. The Queen's Royal have scarcely had ten volunteers altogether from other corps.

Though not immediately connected with the present subject, it may be interesting to exhibit the ratio of mortality by the same classes of diseases amongst the Officers, and more especially as our long service with the Regiment will enable us to do so with great correctness.

No. 6. — *Abstract shewing the Diseases by which the mortality amongst the Officers of the 2d or Queen's Royal Regiment, has been occasioned at the various Stations under the Bombay Presidency, from the 1st of June 1831, to the 31st of May 1842.*

	Died. (Corrected.)	
Aggregate Strength about 407.	Total Died.	Ratio per 1000.
Diseases of the Lungs	"	"
——— of the Heart	2	4.9
Fevers	1	2.4
Hepatic (Abscess) *	7	17.2
Stomach and Bowels (Chronic Visceral)	1	2.4
Wounds and Accidents	6	14.7
All other Diseases	1	2.4
Total	18	44.

* Only one of these a sequel of Fever.

N. B. Only two deaths by disease, under 7 years residence, (Cardiac, &c. Hepatic).

CASES.

No. I. *Consumption.* — Serjeant Thomas Dunlop, ætat. 34. 17 years service; 16 in India. Of a phlegmatic temperament, and moderate frame. States that he generally enjoyed good health till on the late campaign in Affghanistan when he suffered much from pain in the chest, but as all did so more or less from the knapsack and cross belts, he did not give particular heed to it, Was in hospital at Cabul with a small abscess in the vicinity of the rectum. and has had a similar one here not yet healed. Towards the close of last autumn began to suffer from dyspnœa and cough, particularly in the morning.

In October felt something burst in his chest, and immediately after he expectorated about a gill of blood, which at the time afforded so much relief that he did not come to hospital, though the expectoration was tinged for some days after. Has been better and worse since, but almost constantly in hospital since March last, with pain in his chest, dyspnœa and cough, with a copious, thick, white expectoration. Aspect sickly; skin cool ; tongue clean ; bowels regular; pulse 84; respiration 28 to 30, abdominal. Irregular fever and occasional night sweats

Physical Signs. Considerable emaciation. Right subclavian region flattened; left more full and rounded, but deficient in resonance, particularly under 3d, 4th, and 5th, ribs. Respiratory murmur in both subscapular regions, and in right mammary and scapular, tolerably pure. From right clavicle to nipple mixed with sonorous and muco-crepitating rales, nearly choked with them under left clavicle, and lower down only a thin gurgling is audible. No bronchophony or pectoriloquy.

Diagnosis. Phthisis Pulmonalis. 28th August 1841. Invalided in September. Died at the depot Colaba, 28th January, 1842.

Autopsy, by Assistant Surgeon Dr. Barrington. Nine hours after death. Right lung of a greyish colour interspersed with dark lines, quite free from adhesion, and in every respect healthy. Left adhering to costal pleura, by means of a fleshlike membrane three or four lines in thickness. Excavations in every part, one at the inferior portion capable of containing an orange lined by a smooth semi-cartilaginous membrane, and containing thin purulent fluid. The entire lung studded with tubercles in different stages, and no part of it pervious to the air.

No. 2. — Serjeant Richard Bolter, ætat. 32. 17 years in service; 16 in India. Of phlegmatic temperament, and tall bony frame. Was in hospital at Poona in 1835, with œdema of the feet and ankles and other slight dropsical symptoms, together with an excited action of the heart simulating hypertrophy, but afterwards enjoyed good health, he says (was mounted as provost Serjeant during the whole of late campaign in Scinde and Affghanistan) till November last, when on march up from Cambay to Deesa, with a detachment of recruits he was suddenly seized with hæmoptysis. Expectorated about 2 ozs. in all, but thought it was from his having been over exerting his voice. Did not come to hospital till May last, when he presented himself with his present ailments, dyspnœa aud cough, particularly at night or in the recumbent posture, with a pretty free muco-purulent expectoration, sometimes tinged with blood. Skin at present cool ; bowels regular ; pulse 72, moderate ; respiration 18, thoracic. No night sweats or other hectic symptoms.

Physical Signs.—Body generally, thin and attenuated ; chest narrow ; clavi-

cles and upper portion of sternum, prominent ; scapulæ flattened. Deficient resonance in right subclavian region, with high sonorous respiratory murmur; murmur less loud in left subclavian, scapular and axillary regions, but with mucous rale, particularly under 2nd rib anteriorly, where after coughing it becomes thin and subcrepitous or gurgling. Full, softer and pure (semi-puerile) in both mammary and subscapular regions. Bronchophony questionable in right axillary. Heart's sounds and impulse, normal.

Diagnosis, Chronic Pulmonary Catarrh of upper lobes. (Phthisical) Deesa, 10th September, 1841. Invalided, September, 1841 Died at Colaba, 16th February, 1842.

Autopsy by Assistant Surgeon, Dr. Barrington, 10 hours after death. Body much emaciated, face of a lurid hue. Larynx internally presented a large patch of ulceration, extending from, and implicating the, Glosso-Epiglottidean mucous folds. The rima glottidis, which was more patulous than natural, rigid and uneven. The posterior surface of the thyroid cartilage down to the attachment of the crico thyroid ligament, and the arytenoid cartilage of left side, ulcerated. Mucous lining of trachea and bronchial tubes, vascular. Lungs presented one mass of tubercles in their different stages of development, and an abscess of some size existed at the top of left lung. Ilio-cæcal valve and rectum also presented a few spots of ulceration.

Remarks. — Relative to these cases, it will be observed, on a review of the symptoms and physical signs, the diagnosis lay between chronic pulmonary catarrh or bronchitis, and phthisis tubercularis. The fact is, both were present, but with regard to the first case, we inferred also the latter disease from the hectic symptoms. The chief diagnostic in both, however, was the bronchitis being nearly confined to the upper lobes. The gurgling rales might have been in consequence of its complication with dilated tubes. We had not then seen the excellent "Treatise on the diagnosis and treatment of diseases of the chest," by Dr. Stokes of Dublin, or we should have had no difficulty. It was quite evident, they were not ordinary cases of phthisis. But the chief point we would draw attention to in the first case, is the comparative flattening in right subclavian region, the dulness on percussion and tubercular disease in left. Dr. Stokes explains this when he says, in speaking of chronic tubercular development, "these cases too being almost of long duration, dilatation of the air cells often occurs." This we apply of course only to the conformation of the chest, the dulness may be explained by the subsequent disorganization of the lung. With regard to the right having been found quite healthy, we think it will be admitted there was a chronic bronchitis of the upper lobe when the case was taken. There was no dulness in the subclavian region and therefore we may infer there was nothing else at that time. It is curious, however, that it did not afterwards become tubercular. This we certainly expected.

Before dismissing this subject we would advert to a species of tubercular disease by no means rare, particularly amongst young soldiers. It is masked under symptoms of dysentery, and from the frequency of that disease in India is constantly mistaken for it. The dysentery acts as a revulsive, for with care little change will sometimes be observed for a whole year. They are apt to be cut off however, in the rainy season, by diarrhœa or dysentery, under which they are included in the official returns.

Cardiac and Aortic Disease.—No. 1.—Private Peter Daly, ætat. 32; 16 years service; 14 in India. Of a choleric temperament, and moderate frame. Has been acting mess Serjeant for the last two years. States that, with the exception of five days last hot season with the fever then prevalent, he has scarcely been in hospital since he came to the country, but that during the last two months he has suffered much from dyspnœa and palpitation on exertion as in running from the mess-house to the gate, from the former to such a degree as to take away for a time the power of speech. In every other respect enjoys the best of health. Face and lips much paler than formerly; skin cool; pulse 120, small, but firm.

Physical Signs. Condition inclined to corpulency. Chest well formed, but with a visible tremor in cardiac region. Respiration high, full and sharp. Deficient resonance over lower half of sternum, and left 4th, 5th, and 6th, cartilages, the two latter to line of nipple. Heart's impulse strong and heaving over all the cardiac region, but strongest much at sternal junctions of 4th, and 5th, cartilages or under the sternum. Systolic sound masked by a rather prolonged sawing murmur, sharpest about middle of sternum. Diastolic dull, slight double bellows under upper portion of sternum, but none over the clavicles.

Diagnosis. Hypertrophy with dilatation of right ventricle, and probably also of the auricle, moderate hypertrophy with contraction of left. No aortic or valvular disease.

Prognosis. Death within six months. Deesa, 27th February, 1841. Died at Colaba, Bombay, 30th April, 1841.

Autopsy by Assistant Surgeon Dr. Barrington, 6 hours after death. About two pints of dark coloured fluid on each side of chest. Lungs except a small portion of right lower lobe free of disease, — here there was considerable sanguineous congestion. Pericardium contained a few ounces of limpid serum. The parietes of both ventricles of the heart, but most particularly the left, in a hypertrophous state, with corresponding enlargement of the cavities. The heart weighed 21½ ozs., more than twice the weight of that of a large man. The similunar valves were ossified, the aortic orifice much enlarged, and the ascending portion of the arch dilated to nearly twice the natural size, without apparent disease of the coats, further than a slight puckering of the lining membrane. Liver enlarged, and of an unhealthy brown color. From the serous membranes of the intestines, a dark colored effusion to the amount of three or four pints.

No. 2.—Private Michael Dunovan, ætat. 20. 2 years service; 1 in India. Of a melancholic temperament, and slender frame. Admitted 11th February 1841, complaining of dyspnœa on exertion, as at Light Infantry Drill, palpitation, oppression at chest, and occasionally cough, of some months duration.

Also of a pain in right ear, which he reported to have come on the previous evening on parade, at the time he thought from the awkward pressure of his cap. His skin was cool; pulse 92, comparatively small and indistinct at left wrist. Heart's sounds were extensively audible, and respiratory murmur low and rough, but without rale.

Has been twice bled to the extent of 8 ozs., and has been taking saline and other cathartics, and now feels so well that he wishes to return to his duty; makes no mention of the pain in his ear, but when the pulse rises to 100 or upwards, which it sometimes does during the heat of the day, he experiences an acute throbbing in his forehead and ears. Skin always cool; pulse at present 72, not very well sustained, and comparatively small at left wrist.*

Physical signs. Condition healthy. Chest well formed, aud without deficiency of resonance, except along 4th left cartilage towards the nipple. Respiration low over all the chest, but on forced respiration markedly highest in left subclavian region, Impulse of heart always plus, moderately when circulation is calm, but strong and abrupt, up and down, when accelerated. Second or diastolic sound loud and large under left clavicle. Very distinct and sharp under right. Systolic not audible under right, and scarcely under left. In cardiac region both are loud and abrupt. No bellows murmurs.

Diagnosis. Moderate hypertrophy by increased, extent (of the parietes) of left ventricle. No aortic or valvular disease.

Prognosis. With care will ultimately do well. Deesa, 3d March, 1841. Died rather suddenly, 5th April, 1842.

Autopsy. 6 hours after death. Head, nothing remarkable; heart fully half as large again as closed fist of subject, a little broad at apex, but the right ventricle apparently the broadest and largest. Parietes of left ventricle, at thickest part, 7-8ths of an inch. Right at base, 5-8ths or 6-8ths but elsewhere not more than 2-8ths or 3-8ths. Muscular cords strongly developed. A good deal of fat upon the organ externally. No other particular morbid appearance.

No. 3. Private William Sulton, ætat. 43; 10 years service, 9 in India. Of a melancholic temperament, and small slender frame. Joined the Regiment, as Master Tailor, but was soon after reduced to the ranks for intemperance. Was through the campaign in Scinde and Affghanistan as a Private, but has again been acting Master Tailor since his return in 1840. Admitted at 4 A. M. of the 8th of May 1842, with great oppression at chest, dyspnœa and a bloody frothy serous expectoration. Had seldom or never been in hospital, but his comrades say he had not been well for a long time previously. Felt very unwell the evening before admission, but as a detachment of recruits was expected next day, did not like to come to hospital. Became suddenly worse at 3 A. M. and died at ½ past 4.

Autopsy.—Noon. Frothy serum issuing from the mouth. Lungs rather expanded beyond the bounds of the thoracic cavity, and their tissue gorged with bloody frothy serum, which flowed copiously every where from their cut surface. The parenchyma was not broken down, but in the upper lobes were several irregular hernial like protrusions through the pleura pulmonalis, one or two the size of a walnut, evidently containing fluid held in by a thin transpa-

* The left radial artery divided two inches above the wrist, and only the smallest branch followed the usual course.

rent membrane, which when cut gave exit to a stream of the bloody serum; 6 or 8 ozs., of serum also in either pleural sac.

Heart twice the size of the closed fist of the subject, and apex blunted. Left ventricle at thickest part, one inch in thickness. Right, soft and flabby, 2-8ths to 3-8ths. Base of aorta, thick, irregular and gritty, with calcareous deposition in sub-serous tissue. Semilunar valves and ascending aorta, generally, more or less irregular and cartilaginous. Blood also flowed freely from liver when cut. Deesa, 8th May, 1842.

Remarks. —With reference to the first of these cases we may observe the apparent greater hypertrophy of the left ventricle probably in some measure depended on the natural greater thickness of its parietes (nearly as three to one) and hence the necessity in all such caces of exact measurement. The hypertrophy with dilatation of the right ventricle was inferred from the extensive dullness and strength of the impulse under the sternum, together with the degree of dyspnœa on exertion. The hypertrophy with contraction of left, from the impulse in that region and moderate volume of the pulse. "No valvular or aortic disease," probably because we supposed the distress of the respiration and the murmurs indicative of these, were sufficiently accounted for by the disease of the ventricles alone. Compare our former cases, and particularly with the 2d of these. We are strongly inclined to believe also from the rapidity of the pulse, the prolonged sawing was referred to, the systolic *instead* of the diastolic sound in the first instance. This last, as far as our observation goes, is always associated with disease of the base of aorta or valves:—See our cases every where.

None of the above it will be observed, could in any way be traced to rheumatism, the supposed fertile source of these affections. The first would seem to have been brought on by a change of life from activity to luxury and sloth. The second we would ascribe to an originally disproportioned organ, which in ordinary life in a cold climate, might never have been discovered, but which the feeding, the duties and tight dress of a soldier excited to hypertrophy with dilatation. Our prognosis in this was falsified by the result, but as it is difficult to persuade a person to submit to the necessary regimen in this disease, and as he was extremely anxious to return to his duty whenever he got a little well, we were prevailed upon to gratify him, thinking it would at least prove his unfitness and prepare the way, he being a young soldier, for his final discharge from the service. In the cold weather he got on much better than could have been expected, at least, he managed to keep out of hospital, but on the 1st of April he was again admitted and died on the 5th; rather unexpectedly, as he had not been noticed to be worse than formerly. He had been bled that morning

I believe to the extent of twelve or sixteen ounces, and at least, once before for the relief of the palpitation, &c.

The third may be ascribed to a similar cause, at least this man had always a cold badly nourished appearance, though scarcely ever in hospital. He entered the service late in life, and from his previous habits must have felt the knapsack and cross belts very much during the campaign in Scinde and Affghanistan though he did not complain. Had he continued as a private, no doubt he would have been compelled to have to come to hospital at a much earlier period, though from the state of the aorta and valves there is little probability that his life could have been prolonged more than a few months. This combination of cardiac with aortic disease we invariably meet with in old soldiers, indeed after thirty years of age, and in these it runs generally a very rapid course. In the young, particularly under eighteen or twenty, the same degree of disease apparently is borne for years, though of course all tend ultimately to the same result. The above case shows indeed what a state of disease in these organs may exist with little suffering, comparatively, so long as the habits of life are passive.

It would seem also to have demonstrated the proper investing membrane of the lungs, (see autopsy) independent of the pleura, as described by Dr. Stokes of Dublin.

Mrs. Kennedy 2nd or Queen's Royal Regiment, ætat 19. ; 17 months in India. Of a melancholic temperament, and small slender frame. Admitted 9th June 1842, complaining of stuffing and smothering in her chest with palpitation and a catching pain under lower portion of sternum, on inspiration, shooting up to her left shoulder and back of her neck, which she reports to be of only three weeks standing, though she admits she had the beating when in hospital in March last.

States that she always enjoyed good health previously to her arrival in India, and never had any thing the matter with her chest. Had the fever in Bombay last rains, and again the greater part of the way up to Deesa, and very often since. Has since admission been bled three times, in all to thirty-six ounces, and with very great relief.* Can now lie down, which she could not previously. Skin cool ; tongue clean ; bowels active ; pulse 116, quick, and tolerably sustained ; respiration 34, abdominal and thoracic.

Physical Signs. General condition tolerable. Very extensive dulness in cardiac region and both sounds of the heart masked by sharp sawing murmurs, most superficial or loud under sternal junction of 4th and 5th left cartilages and under the sternum, the diastolic loudest and much prolonged. Systolic under upper portion of sternum pure and dull. Diastolic still with

* Here we would again urge the necessity of extreme caution in the use of this remedy in these affections, we continually meet with cases simulating organic disease from depletion and fever alone.

sharp sawing murmur. Both pure under left clavicle, not audible under right near the shoulder, and only slight bellows above. Impulse in cardiac region not heaving. Respiration puerile.

Diagnosis. Morbid state of the base of the aorta and valves, the former dilated and cartilaginous; arch healthy. Hypertrophy with dilatation also at least, of left ventricle.

Prognosis. Life very uncertain. Death within six months, preceded most probably by Hœmoptysis.

Remarks.—This patient is since dead after a very short illness, but whether from this and fever or cholera we do not know. The case is introduced because it is the first we have met with in the female sex, and though there is no post mortem report, because the diagnosis may be considered *substantially* as equally correct, there can only be error in the details; that is, the base of the aorta and not the valves may have been the seat of the disease or vice versa; or the right ventricle may have been affected as well as the left, or in some degree both auricles and ventricles.

To explain, we divide the evidence deducible from the physical signs into three kinds or degrees. In the first, they do not contradict the symptoms merely, and so furnish a negative evidence in their support. In the 2nd, they are positive of their kind, but as they may depend on different diseases, they require the symptoms to compare, whereas in the 3d, to which the above belongs, they are conclusive of themselves. In these, however, we go farther, and attempt to anticipate the Necrological report.

Aneurism of the Abdominal Aorta. — Private Charles Floyd, ætat. 43. A gardener, 20 years service, 16 in India. Of a melancholic temperament, and rather slender frame. Admitted 21st August 1842. Complains of pain in epigastric and left hypochondriac regions, with a dead feeling of weight at the pit of the stomach. Skin cool; tongue clean; bowels regular; pulse 72, rather small. States that he first began to suffer from pain across his loins in Scinde in 1839, and from his present ailments soon after his arrival at Deesa in 1840. Was in hospital with the former a short time ago, and frequently of late it appears with "bowel complaints."

Physical Signs. Condition rather thin. Resonance of chest, cardiac and hepatic regions, normal. Fulness in epigastrium with circumscribed hardness and fleshy dulness on percussion, evidently from a pulsating tumor (on palpiatation) something of the size and shape of a child's head. Friction sound, and a very loud forcible filing, the last synchronous with the pulse, and loudest near the centre and left, a little mesial to left cartilaginous border. Not audible in left hypochondrium, nor any where away from tumor. Strong forcible heaving impulse communicated by the stethoscope from the tumor in all directions.

Diagnosis. Aneurism of the abdominal aorta.

Prognosis,—Sudden death within three months. Deesa, 1st September, 1842.

September 2d.—Complains to-day of pain across the loins. Purring tremor

very perceptible close to left cartilaginous border, where morbid murmur is loudest. Murmur itself double at this part, the first abrupt harsh and rasping or filing, the second filing and musical, but only over a space one or two inches in diameter.

There is also a hard tumor in left ham, the size of an egg which disappears on raising the limb above the level of the body and pressure. This also he first noticed about two years ago. Knows no cause. Has always been a healthy man. Never had rheumatism, venereal, or been salivated.

For the following we are indebted to Dr. Stone, H. M.'s 14th Light Dragoons, in medical charge of H. M.'s depot, Colaba.

December 24th.—Yesterday at 7 P. M., when at the close stool, he felt something in the abdomen give way, followed by a sensation as of boiling lead trickling down towards left thigh, and faintness. Soon became insensible, and died at 10 P. M.

Autopsy, 10 A. M.— Head, not examined. Thorax, all the viscera healthy. Abdomen, on laying aside the integuments nothing remarkable was observed. The stomach, bowels, liver and spleen, having been removed, a large bloody membranous mass occupied the left lateral and lumbar regions which on being separated from the aorta, the latter was found expanded all round into a cavity 6 inches by 3 or 4, having its inner membrane thick, white, and irregular, the origin of the cœliac artery about its centre. When separated from the body this cavity presented two solutions of continuity, the one large irregular and ragged, corresponding with the three last dorsal vertebræ which were deeply eroded, the other with the anterior and left lateral aspect of the tumor and nearly opposite to the origin of the cœliac artery. A little bloody serum in the general cavity. Left kidney enveloped in the bloody mass, but not perceptibly reduced in size.

In the left ham was found a tumor the size of a walnut, on rather perhaps a cyst filled with a pale yellow thick gelatinous fluid. This was the tumor in the ham suspected also to have been aneurismal, though we had failed to prove it by means of the stethoscope. The circumstances favoring that view were so strong that we were inclined to distrust the negative evidence afforded by the absence of the usual signs.

We have elsewhere adverted to the difficulty often experienced in detecting aneurismal tumors in the abdominal cavity with certainty, even with the aid of the stethoscope. The above case is an exception however to the latter part of the rule, but this we attribute to the succulated aneurism into which the true seems to have opened in the region of the morbid murmurs and purring tremor. See case, Physical signs.

The cause of this difficulty we ascribe to the dull fleshiness of all the surrounding parts, and the want of a proper rest for the stethoscope, without pressing upon the artery. We have ourselves been deceived both ways where the signs were equivocal, but in a case like the above of course he who ran might read. To the pure symptomatologist however, insuperable difficulties would have presented themselves, which only death and a post mortem examination could have removed. To the symptomatologist and stethoscopist combined, certainty itself could not have been more sure.

Febris Remittens, Gastro Hepatic and Pulmonary. 1842 May 8th, Private James Cottis, ætat. 21 ; 3 years service ; 2 in India. Of a melancholic tempe-

rament, and rather slender frame. Admitted last evening in the hot stage of fever, accompanied with nausea and acute catching pain at the epigastrium checking his breathing. Skin hot; bowels moved; pulse 130. Epigastrium tender, had a purgative on admission followed by the Solut. Sulph. Magnes. V. S. ad ℥xii. Cont. Solut. *Vesp.* Pil. Hyd. gr. x. c. Opii. gr i. hs. Mist. Salin. c. Nitrat. Potass. 3 qq. hora.

9th.—Acute catching pain in right iliac region with tenderness on percussion. Skin still hot; pulse 96; Hirud. et fotus p. d. Rept. Pil. Hyd. Opii. et meridie habt. Ol. Ricini ℥vi. c Tinct. Opii. m. x. Cont. Mist. Salin.

10th.— Fever all yesterday. Pain now shifted up to right subclavian region; iliac and along in front of cartilaginous border, full and tense, resonance plus gastric. Skin of extremities cool, of body hot; tongue loaded; bowels open; pulse 100. Had the blue pill and opium again at bed time Ol. Ricini ℥i. c. Tinct. Opii. m. x. Cont. Mist. Salin. c. Nitrat. Potass. Sulph. Quinine gr. ii. 2da qq. hora. *Vespere* Enema domestic. Rept. Pil. Hyd. et Opium.

11th.—Feels easier when lying quiet. Pain now referred to the hypochondrium, with dulness on percussion from cartilaginous border to near the nipple. (Was in hospital last year at this time with hepatitis and dysentery.) Abdomen hot; extremities cool; bowels open; pulse 96. Hirudines et fotus hypochond. Rept. Med. ut heri. (I was now laid up with fever, and did not see him again till) May 19th. Feels quite easy, only weak. Skin pretty cool; tongue covered with a dark moist load; bowels active, pulse 96; hepatic dulness from nipple to an inch in front of cartilaginous border, and from apex of right scapula downwards, with crepitating rales over all that subscapular region, and round superiorly to nipple. No vocal resonance.

23th.—Feels quite easy. Skin cool; pulse 124. Dulness on percussion now extending above the nipple, with a moaning and piping rale for an inch or so above the dull region, in both lateral and mammary, with an occasional crepitating in lower interscapular region. Murmur extinct in subscapular, and sound on percussion quite dead. Blue superficial veins meandering down over the the right hypochondrium. Abdomen tense and semi-tympanitic.

June 1st. — Hypochondrium becoming very full and rounded. Dulness on percussion from 3d rib to two inches in front of cartilaginous border. Skin warm; pulse 108. Respiration puerile in left chest anteriorly. Comparatively low but pure under right clavicle. 5th. Died at 8 A. M.

Autopsy. Noon.—The right lobe of the liver and lower lobe of the right lung occupied by an immense abscess filled with a thin greenish matter. The cavity was lined with a cyst, and no traces of vessels were observable except two or three short fleshy looking shreds. The lower lobe of the lung had been completely removed, and the lower part of the middle ulcerated off nearly horizontally across leaving a thin web on the sac anteriorly. Laterally the pleura adhering to the parietes seemed itself to be the sac. Lung for an inch above this, dark red and congested. Caecal valve and six inches of colon, thickly set with large circular ulcers having thickened edges. Left lobe of liver, straw colored.

Remarks. — It would appear that on admission, in addition to the remitting fever at that time very prevalent, there was in this case an old latent enteritis and hepatitis which were roused by it into activity, and

that the removal of the lung by ulceration was the effect of hepatic abscess.

It may be thought curious, however, that the abscess should have progressed so far without bursting through the bronchial tubes; but from what we have observed this is really a much more rare occurrence than is generally supposed by non-stethoscopists. We were first led to this by our anxiety to trace a case this way by the anscultatory phenomena. We have seen several take this course, whether from the substance of the liver or beginning between its peritorineal coat and the diaphragm, but not one can we say, that has actually burst through the lung. The muco-purulent discharges mixed with blood which in some cases are copiously expectorated, come from the lungs or bronchial tubes themselves generally from a progessing pneumonia and bronchitis. *

Indeed, comparing these with the contents of the abscess afterwards, is fully demonstrative of this. But we have seen the same in a case of lumber or psoas abscess, which had risen up behind the pleura *without penetrating* it.

We were at a loss at first in the above case on detecting the crepitating rales, &c., to determine whether the disease of the lung, was itself a primary complication, or only consequent upon a hepatic abscess, but the absence of vocal resonance, and afterwards the extinction of the respiratory murmur with the belt of crepitating rales surmounting the dull region, and progressing upwards, were quite conclusive. Dr. Barrow, Queen's Royal, had noticed the anscultatory phenomena the day previous, but having had the whole of the hospital duty at the time on his hands, had not particularly adverted to them.

There would of course have been no difficulty, had we made certain of the state of that portion of the lung on admission. We were only led to it by the ascent of the hepatic dulness, and crepitating rales under the nipple.

Deesa, 23d June, 1842.

Case of Snake bite.—M. A. W. ætat. 15. A rather delicate girl, of a melancholic temperament. Admitted last evening having been bitten by a snake supposed to be the common species found there in all the compounds during the monsoon) which she had accidentally trampled upon. There are three dark spots on the outer dorsal aspect of left foot near the instep, which are said to be the wounds made with the teeth and burnt with lunar caustic twenty minutes or so after the accident. The foot and ankle are hard, swelled, and of a pale shining color mixed with livid. Leg and knee also swelled. Has been expectorating small quantities of grumous blood since midnight. Respiratory

* Or do the bronchial membranes take on a vicarious action?

murmur pure and equal. Took some coffee this morning which excited vomiting. Seems quite easy and makes no complaint.

Noon.—Swelling of leg and knee increased with some increase of temperature; grumous expectoration moderate.

Evening.—There has been a slight oozng of blood from the wounds. Leg more swelled. Circulation and temperature generally, moderate. Expectoration still mixed with grumous blood.

24th.—Foot and ankle hard and more livid. Hardness and lividity also of leg. A large livid patch or ecchymosis in ham. Petechial spots and vibices also on arms and hands. The leg, foot, and ham, now exactly resemble purpura or dry scurvy common in Colaba, Bombay. Gums have also been bleeding a little. Makes still little complaint.

Noon.— Grumous expectoration still very moderate. A large vibex now near the stomach. Petechiæ on right leg and foot. Former patches increasing in size and darkness. Occasional vomiting.

Evening.—No vomiting. Hæmoptysis, trifling. Spots and vibices darker, but swelling and hardness not increased. Several spots about *the right* foot and ankle, and smaller ones on the back of hands and on the forearms. One rather large vibex on left forearm, and an old bruize-like patch on the other. Skin cool; pulse 112.

25th.—Fainted in the night, and is still pale and weak. Ecchymosis on left forearm paler. Two or three petechial spots on the face. Hæmoptysis continues and oozing from the bites. Skin cool; pulse 120. The leg is at present about twice its natural size and of a pale livid color mixed with darker patches about the foot.

Evening.—Again great tendency to syncope since 3 P. M. Swelling, &c. much as before, pulse 134.

26th.—No hæmoptysis since yesterday, but very thirsty all night, pulse 120. Swelling, vibices, and ecchymosis in ham, darker.

Evening.— Ecchymosis in ham still very dark, but leg generally becoming of a straw color. Foot livid, tense and warm. Spots on feet and arms fading. Skin cool; pulse 136, quick and rather hard. 27th. Leg much softer and considerably fallen. Blackness in ham changed into straw color. Leg also and foot straw colored. Spots fading. Those on face gone. Pain over the coronal suture all night. Skin cool; pulse 120. Convalescent.

N. B.—This case was assiduously treated by Dr. Jopp, Queen's Royal, with ammonia, camphor and opium, wine, beer, &c.

Article IV.

Portion of the Annual Report of the 1st Troop Bombay Horse Artillery, embracing the first eleven months of the year 1841. By A. H. Leith, A. M.

Presented by the Medical Board, June, 1842

From the commencement of the year up to this time the Troop has continued in tents, and it has been subjected to considerable changes of climate. In the beginning of the year we were encamped in the vicinity of Shikarpoor, from thence we marched on the 14th January, and between Khanghur and Munyotee crossed the desert which lies at the southern end of Kuchee; we continued our march by Shahpoor and Chachur to the neighbourhood of Bhag. This small town is on the Naree river, the most considerable of the five streams that water Kuchee, and it is nearly in the middle of the plain, being about thirty miles from the Brahooee mountains, between thirty and forty from those of the Murrees, and about forty miles from the desert which lies to the southward, and the same distance from the hills which bound the plain to the northward. The soil of the plain is for the most part alluvial, there are some spots however, as at Shahpoor, where the alluvium is covered to some depth by silicious sand. In the neighbourhood of water it appears rich, and there, when uncultivated, it is covered with underwood or small trees of acaciæ, zizyphus, capparis, &c. and near the streams tamarisk, asclepias gigantea and oleander abound. Again there are extensive tracts, which from want of water, bear only salsola or capparis, or which are in appearance perfectly bare of vegetation, yet in the midst of such bareness and aridity, flights of pterocles are seen; many such tracts have evident marks of former cultivation and in the midst of them are the remains of villages. The present desolation has been in those cases caused by the supply of water having been diverted to the cultivation of the fields of some more powerful tribe. The soil appears to be impregnated with a considerable quantity of soluble saline matter, for the edges of streams are often incrusted with it, and the water of wells which remain long undrawn, becomes brackish and unfit for use. At Khan-

ghur, on the edge of the desert, I found a well in the fort to be so, it contained as much as 6.5 per cent. of saline matter, and the water in the large pukka well at Rojan is generally found to be brackish and purgative, but is more especially so in the hot months, at which season there are fewest travellers and evaporation is most rapid. I had some of the water from the latter well sent to me for examination, but from its having been much drawn just before, I did not find more than the trifling admixture of saline matter that well water usually contains. The small kucha wells at Rojan from which the villagers draw their drinking water, and which are continually being exhausted, yield sweet water.

The mountains on either side of the plain appear to be of limestone, and to the northward the first ridge is of sandstone and claystone, and the next of calcareous conglomerate, beyond which, ridges of different limestones rise in succession. Near Shoran there are sulphur mines, and from thence, along with specimens of the sulphur, I received some alum and a bottle of water very highly impregnated with iron.

In the month of February we marched again and accompanied a portion of the force to the N. E. extremity of the plain. This part of the country we found to be highly cultivated, the greater part of the water of the Naree river being consumed in the irrigation of the lands of the warlike Patans here located; indeed the villagers in the course of the Naree below Mitree, are chiefly or wholly indebted to the floods which follow heavy rain for filling their canals and the tanks that they form by throwing bunds across the channel of the river.

On the 20th February the village of Khujuk was attacked by our detachment, and owing to particular circumstances, a part of this Troop was engaged in the assault and consequently the casualties in it were numerous, being in all one officer and five men killed, and one officer and six men wounded, and also two followers wounded. After halting for a month at Khujuk, we marched to Dadur which is near the mouth of the Bolan Pass, in a well irrigated spot producing jowaree, barley, wheat, cotton and indigo. It is in some measure separated from the rest of the plain by the Nowshummun, a low ridge of hills of claystone with sandstone overlying it, which runs about W. S. W. and E. N. E. and its confined situation appears conducive to its overpowering heat during the season of the sun's greatest northward declination, for the heat at Bhag, which is in the open plain, although described as being intense, is allowed to be far more endurable and to be less unhealthy than that at Dadur.

In *January* we had severe cold during the nights and mornings; on the

morning the Troop marched from Shikarpoor, the thermometer fell to 25° Fahr., and the water in the canteens carried by the men was frozen. In *February* the weather became milder, and in the last week of that month we had heavy rain. *March* was agreeable in temperature. In the beginning of April at Dadur the weather rapidly increased in heat and became close and disagreeable. The wind up to the middle of March was generally light and from the N. or N. W. after that time it blew stronger, and at the end of March and beginning of April, a strong S. W. wind prevailed and was accompanied with dust. Up to this time the admissions into hospital were very few, being, with the exception of wounds and accidents, but fourteen during the whole three months: the total number was 23.

After a halt of about three weeks at Dadur, on the 7th April we began to ascend the Bolan Pass to Khorasan. Having passed through the first ranges of hill of sandstone, claystone and calcareous conglomerate, from Kundye we continued to ascend the bed of the stream, our only road, through the Tung-i-Guttee, a chasm of nearly two miles in length in a compact white limestone, whose fossils are cephalopoda (chiefly spheruluæa) and corals; this rock is cavernous and also very much and minutely fissured. The valley then became wider and disclosed in its precipitous sides a greenish blue shale under limestone. A little below Kirta the only habitation of man seen in the Pass, from the abrupt termination of the mountain ridge on our left, the valley suddenly opened out much more. We encamped in the Kirta plain at Gurm Ab, where a warm spring rises out of the nearly level ground; the temperature of the spring I found to be 82° Fahr. After passing Beebeenanee we came to Ab-i-goom where, as the name indicates, the Bolan stream is lost in the shingle. Ab-i-goom is in the centre of a basin more than half encircled by lofty mountains of a purplish-grey limestone, abounding in encrinites, cephalopodous mollusca &c. and open towards the S. E., and it is in the midst of rocks of the coal formation, which extend in every direction for several miles and are then lost under a thick deposit of recent and imperfectly solidified conglomerate of rolled limestone, that reaches to the bases of the surrounding mountains, the strata of which dip under it. The beds of this coal formation have been much and to various extents upheaved. In a mural cliff on one side of the bed of the stream in which our road lay, there were disclosed seams of coal inclined from 60° to 70°: in this cliff were the best specimens of coal that I could find in a superficial search in a circuit of several miles, and here it existed in quantity by far too small to render it of any value, for 660 feet of rock contained but an aggregate of

4 feet of coal and this small quantity was distributed in seams varying from 3 to 9 inches in thickness; in quality it was rather inferior; even were the coal on search found to be abundant in this district, its locality at a distance from any supply of labourers and offering such obstacles to transport, in the state of the road and want of forage, must preclude any advantage being derived from it. A loose bluish clay shale, in which I could find no vegetable impressions, alternates with the carbonaceous seams and limestone and a little calcareous sandstone; the shale contains talc and gypsum. At Sir-i-Bolan from the foot of a mountain, a large stream gushes out, the temperature of which I found to be 70° Fahr. and in October, when we were descending the Pass, it was the same, but this is considerably above what the annual mean temperature of the air can be at that place and the stream issuing from a limestone mountain makes it the more likely to be a thermal spring. A little below * Sir-i-Bolan an adiantum of a species common in Khorasan was found growing, as is its habit, in the shade of an overhanging bank close to water; at Sir-i-Bolan the colocynth, which grows rather plentifully in Kuchee, is last seen, and a little above that place the acaciæ, capparis, asclepias, nerium and "puneerbund," disappear and are replaced by the pistacia, amygdalus, ficus (carica) daphne†, which are found in the long narrow and deep zigzag defile, through which at seasons the mountain torrent flows and which terminates the Pass at its upper end: an arboreous juniper (the J. Phœnicea) is abundant in some neighbouring ravines and attains a great size, one I measured was 8 feet in girth. On emerging from this defile by the Khur Lukkee, we entered on a plain covered with salsola and southernwood, and sprinkled at that season with the blossoms of bulbous plants among which was the tulip. This plain is without water and consequently unproductive, and it bears the appropriate name Dusht-i-bedowleh: from it we entered the valley of Shal, which likewise abounds with artemisia and salsola, and also with a peganum, a handsome sophora and a yellow flowered corymbiferous plant called mungoolee by Brahoos and gungoo by Patans, but I need not add to what I have already written in my Statistical Report on this valley.

On ascending the Pass, at Ab-i-goom we experienced a very sensible decrease of temperature and this became greater as we advanced. We arrived at Quetta about the middle of April and had for some time cold

* The elevation of Sir-i-Bolan above the level of the sea is estimated to be near 5000 feet.

† This daphne, which is called "peepul," by the natives of the country, appears to be the D. salicifolia, it is given by the hukeems as an emetic, the dose being two leaves rubbed up with water; its action is said to be powerful.

and rainy weather: the neighbouring hills were still capped with snow. The temperature soon however increased, and it rose rapidly until the middle of June. In July the heat was more oppressive from the cloudy and hazy state of the atmosphere, and in August too it was sultry; this year the temperature far exceeded its usual height. In the beginning of September at full moon there was a sudden and great diminution of temperature, after this the daily mean of the thermometer fluctuated considerably, but it decreased rapidly although irregularly, and in the middle of October when we were at Sir-i-ab, at the head of the valley of Shal, on our return to Kuchee, the ponds in the mornings were frozen over and the thermometer, shaded from the sky, at sunrise was observed as low as 25.°5 Fahr. On descending the Bolan Pass we again came into a warmer atmosphere.

In *April*, the month in which we were subjected to the change from the climate of Kuchee to that of Khorasan, the number of admissons was 14 inclusive of surgical cases: in *May*, which was mild, there were 9 admissions: in *June*, *July* and *August* they were again more numerous, being for those months respectively 17, 16, and 13: in *September*, when miasmata became more powerful in operation, there were 24 admitted; in *October* 23, and at Dadur during 29 days in *November*, there were 25 admissions.

The number of admissions during the past eleven months has fallen far short of what the returns show to have taken place at Poona, the most favourable of our stations, in 1840 the most favourable year that we passed there, while the average strength of the Troop has been greater than it then was.

Medical Practice.

During the past eleven months there has been little variety in the forms of disease, and the classes "Bowel complaints" and "Fevers" embrace the bulk of the medical cases admitted.

Diarrhœa.—This complaint in Kuchee during the cold weather shewed itself in various degrees of severity, sometimes being mere relaxation of the bowels with thin feculent motions, at other times the flow of mucus was still more increased, and if this was allowed to go on, the mucus became tinged with blood and the disease merged into dysentery. In several instances it appeared to me that the prevalence of diarrhœa was increased by putrid carcases tainting the air with their effluvia and by their being allowed to lie in the streams furnishing the camp with water; thus at Korana, out first march from Khujuk towards Dadur, the Troop was encamped in the midst of putrid camels, no change was pe

ceived to have taken place in the weather and the water was from the stream from which we had drunk for several weeks, yet many were here seized with looseness of the bowels. The treatment in this mucous variety of diarrhœa was usually a laxative followed perhaps by an anodyne.

In Shal (and I found it the same at Mustoong) the diarrhœa of the hot season was of a different nature and appeared to be consequent on a deficient secretion of bile, the causes of which I have entered fully into in my report on the Medical Statistics of Quetta before referred to.* The dejections were grey, whitish or quite white, and thin, feculent and frothy or semifluid, (in some rare cases where no diarrhœa existed the motions were formed and quite white): there were uneasiness and distention in the upper part of the abdomen in almost every case and especially after food. The state of the tongue varied, generally it was furred and foul at base, sometimes the papillæ were very slightly prominent and whitish, at other times the tongue was clean. Hæmorrhoids very commonly accompanied this state of the bowels, and there was occasionally tenderness when pressure was made over the gall bladder, probably from the existence of some distension of that viscus from retained bile. This state of the bowels if concealed by the sufferer, sometimes ended in dysentery, and sometimes in ulceration of the mucous membrane and enlargement of the mesenteric glands. The treatment which I found most useful was putting the patient on farinaceous diet with the finest bread and interdicting all solid animal food ; the exhibition of mild mercurials such as Hydrargyrum cum creta and Pilula Hydrargyri with alkalies and often with Fel bovis inspissatum and small quantities of Opium; in some cases I gave minute doses of Hydrargyri chloridum with Ipecacuan and Opium. When bile was again freely secreted and tinged the dejections, the diarrhœa soon ceased ; in some obstinate cases where tenderness in the region of the gall bladder existed, I thought good resulted from the application of blisters over it. But removal from the extremely dry air of Khorasan or of Kuchee to a moist climate, as that of the sea coast, or in the cold weather perhaps the banks of the Indus, offers a greater probability of recovery in obstinate cases than any course of medicine. At the time that this diarrhœa was prevalent, the hepatic secretion was abundant in fever cases and in these the usual emetic almost always brought up a quantity of bile, and it was by no means unfrequent that this form of diarrhœa was thus checked by the supervention of an attack of fever. In two cases that came under my care unconnected with the Troop and in one belonging to it, tenderness of the gums from the mercurial medicines was complained of while the motions con-

* Transactions, No. iv.

tinued whitish or white, in the last mentioned case the patient was attacked with fever and bile then began to flow.

Dysentery.—It sometimes followed diarrhœa and was subacute, and at other times it was sudden in its accession and sthenic in character : in some cases there was an increased flow of bile. The treatment has been nearly similar to what I have stated in former Reports, to the Ipecacuana however, either with or without blue pill, I have often added small quantities of Sodæ sesquicarbonas with great advantage, especially where the redundant bile caused scalding motions and was an additional source of irritation : in the severely inflammatory cases, I have also added small quantities of Potassæ nitras. The want of good leeches has been very much felt in the treatment of this complaint, cupping being not so well adapted to give relief. In illustration of the treatment of dysentery the case of Gunner Wm. Miller may be referred to. Two fatal cases of this disease have occured, one at Quetta in September in which death followed perforation of the cæcum by an ulcer, of which many of old standing were after death found to exist; this man had continued to perform his duty and never came under treatment until the final short attack : the other died at Dadur after many relapses. One has been sent to the coast for change of air.

Fevers.— During the cold weather instances occurred of fever complicated with congestion and inflammation of the lungs. Among the Europeans of the Troop there were two such, one at Shikarpoor and one at Quetta. Among the native followers the cases were more numerous. The case that occurred at Shikarpoor was in a man of intemperate habits, he had been two days ill in the lines and at the same time drinking hard, he came to Hospital the night before the Troop marched and died three or four days after, while we were crossing the desert. The diary of the case, as usual, was transmitted at the time. In the other case which was treated in the same manner, viz. by active depletion and the use of Tartar emetic the disease was subdued. At Quetta, cerebral congestion was a common concomitant of fever both on our first arrival and afterwards in the hot season ; exposure to the sun was in the latter case usually assignable as a cause. While detached on duty at Mustoong and in charge of the wing of H. M. 41st Regiment and the company of European Artillery there, I observed the same complication. Some of the cases treated in the Troop Hospital were of great severity. Both general and local bleeding were employed, but the latter was by far the more advantageous, and here again the want of leeches was felt, cupping was freely employed and in two cases the temporal artery was opened ; cold wet cloths were applied

to the shaven head and cold water was poured in small stream from a height on the head, or was thrown with force upon it by means of a large syringe every hour or two hours. The case of Gunner Simpson is illustrative of the complication. In September and October intermittents, apparently from endemic causes, became more numerous and often quinine failed to check the disease until venesection had been employed. In November also at Dadur, where the Troop is now encamped, the admissions for intermittent fever have been numerous.

Hepatitis.—The only four cases that have occurred during the year have been admitted in November since our return to Kuchee. All were men who had not before been in Hospital during the year, and two were staff Serjeants and therefore not liable to much exposure; in one the disease of the liver is complicated with fever under which head the patient was admitted; the fourth case is chronic. One of these patients when the hepatic inflammation had been subdued was attacked with dysentery and a change of climate being thought to offer the only prospect of ultimate recovery he was sent towards the coast.

Surgical Practice.

Retention of Urine.—A case was admitted and terminated fatally, but as I was at the time absent from the Troop I shall not enter into the particulars of it.

Incised Wounds.—After the attack on Khujuk there were three admissions, and in each case the wounds were numerous, each man having had to contend with many opponents at once. In one, besides two wounds in the right arm and one over the patella, a sword cut had dislocated the head of the left radius and broken the head of the ulna into fragments, laying the joint extensively open; amputation of the arm by the double flap operation was performed $3\frac{1}{2}$ hours after the receipt of the injury. In another man, besides a small cut in the forearm, there were two severe wounds received simultaneously while in the act of using his sword, one was from a sword which divided the triceps extensor of the right arm about its middle, and raised a flap which terminated on one side in the axilla and on the other at the acromion process, the deltoid muscle also being divided: the other wound was from a battle axe; it penetrated the right side of the chest under the scapula. The wounds were closed by the interrupted suture, adhesive straps and bandages. There was secondary hæmorrhage to a considerable extent from the humero-thoracic artery, which on the receipt of the wound too had bled freely, notwithstanding this, thoracic inflam-

mation had to be combated by some further depletion. His arm is disabled and he has been sent before the Invaliding Committee. The third man had a superficial cut on the back of the right shoulder and a more severe one on the outer side of the left arm, beginning a little below the elbow, extending upwards and raising a flap with a slice of bone from the humerus just above the outer condyle but not implicating the joint ; the piece of bone was removed and the wounds were closed by suture, adhesive straps and bandage ; he had also a small wound in the right check implicating the parotid gland, the scales of his helmet saved him from its being severer, the helmet also saved his head from another cut and this is not the only instance which occured that day where the helmet protected its wearer in the melée. This man tried to make the wound in his arm a plea for retiring from the service on a pension and a Medical Committee had to pronounce on his case when he refused to perform his duty : the unanimous opinion was that the wound caused no permanent disability. Wounds received in action are very often the occasion of men malingering with a view to being pensioned, and of this the Committees which we have had in the Field Force have afforded many proofs ; the utmost firmness in the medical officer is required to check this, but it is a disagreeable thing to have to behave with even but apparent harshness to a man who has been wounded in doing his duty in the day of battle.

The Gunshot wounds were all from matchlock balls and received at Khujuk ; two were very slight, one of a finger the other of the leg, and two were of the thigh, in one of these the sciatic nerve was wounded ; the man suffered much pain from the wound downwards to the toes but especially in the outside of the leg, there was also an intolerable burning sensation for sometime in the foot and toes, these were alleviated by opiates internally and the local application of cloths dipped in cold water. He can now walk with very little lameness when inclined to do so, and there is every prospect that he will soon be able to return to his duty. A Native Artificer on the same occasion was wounded in the leg by a matchlock ball which lodged near the head of the tibia and had to be cut out, and a Dhooleebearer received a ball in the right cheek which made its exit behind the left mastoid process of the occipital bone ; the man at first had difficulty in taking food, and liquids regurgitated through the wound in the cheek, but he soon got well.

Among the wounded of the enemy that we found in the village, I had some severe cases from *spherical case* and also from *musket shot wounds.*

In addition to the surgical cases among Natives which are mentioned above, there were the following.

Retention of urine with the urethra lacerated by the forcible attempt of an ignorant Hospital Assistant to pass a catheter; I punctured the bladder above the pubes with success.

Dislocation of the head of the humerus which took place in the man's raising a bundle to his head.

Dislocation of the elbow-joint in a horsekeeper received in falling.

Fracture of the femur from the kick of a horse.

Amputation of a finger in a horsekeeper on account of an injury.

Wound from a knife *of the palmar arch* in a Native of Kuchee of ten or twelve days standing, hæmorrhage continued and the blood still issued per saltum when the wound was uncovered; properly directed compression stopped the bleeding and the wound healed rapidly.

Sword wound, dividing the scapula and penetrating the chest; active depletion was requisite; the man recovered.

Dadur; 29*th November*, 1841.

Article V.

* *Reports on the Medical Statistics of Upper Scinde, drawn up by the Medical Officers serving with the Force under the command of* Brigadier England.

Presented by the Medical Board, November, 1842.

1

Report on the Climate of Quetta, during June, July, and August, 1841. By R.B. Owen, M. D. Surgeon, 3rd Light Cavalry.

I arrived at Quetta on or about the 17th May, 1841, in medical charge of the 3rd Regiment, Light Cavalry, and during my stay there (a period of about three months), I made daily remarks on the climate, temperature, &c. of the place; with other meteorological observations, which I hoped at a future time I might find useful, but having been robbed by the Kakurs, of a large amount of property while travelling through the Kutchlack Pass, and my portfolio with all my observations on these subjects, having been stolen at the same time, I can now offer little or nothing more than my opinion of the salubrity, or otherwise of the cantonment

* *Note by the Secretary.* These reports were drawn up in conformity to the subjoined memorandum, and of this series of Reports, the one by Mr. Leith on the Medical Statistics of Quetta, and that by Mr. Deas on the Climate of Dadur, were published in the last No. of the Society's Transactions, (No. iv). They are in consequence omitted now.

Memorandum for Medical Officers.

The Medical Officers of this force are to be called on by the Assistant Adjutant General to report, for the information of the Supreme Government of India, on all points regarding the Medical Statistics of their respective stations.

1. The climate generally as regards the troops.
2. The average number of Soldiers per cent. under medical treatment, during the worst months and during the best.
3. The seasons showing the best and worst for the troops, and whether the past season has been in any way a peculiar one.
4. The number of deaths during the last four months out of men.

during my short residence there, and this, be it remembered, I can do only from memory.

Two principal diseases soon became prominent for their severity, viz. bowel complaints of various forms, and fevers.

The bowel complaints among the natives admitted into Hospital, were some of them exceedingly severe, baffling every remedy, until in several cases it was found prudent to omit all medicines for a time; and as many of these cases remained in Hospital after I left the Regiment, I know not what the event proved: —the deaths during my time were very few. Indeed it was admitted by all, that the season at Quetta this year was one of unprecedented heat, the range of the thermometer was occasionally very great between the day, and the night. During the day time we had generally very high winds blowing from the westward, accompanied by clouds of dust, while at night-fall the wind veered to the eastward. The position of the camp was most open, and exposed to all vicissitudes, without the slightest protection, excepting what the tents afforded, and no doubt these constant vicissitudes would have a powerful influence on the native soldiers, and followers, who are generally so very indifferently clad: I had frequently to remark this circumstance, but could seldom find a remedy.

The most severe forms of dysentery were frequently accompanied by fever, and proved more obstinate; accordingly I was myself the subject of bowel complaint several times, while at Quetta. I suspected the water had caused it, and from the obstinacy of the disease among the natives in Hospital, I was induced to conclude that some of the water in the neighbourhood must have had pernicious qualities, and had a great influence on the health of the patients, as in such obstinate cases I kept a most vigilant watch over them, and was convinced that I could discover in no single instance that these people had been indulging in crude vegetables, or fruit of any kind.

5. The sort of accommodation which the troops have had, and specifying how far sickness has been influenced thereby.

6. The particular months during which each station is most unhealthy, and the causes.

7. The unwholesomeness, generally of particular places.

8. The Medical officers are to be directed to make these documents as complete as possible, and to offer such suggestions, as to clothing, &c. with a view to remedy the evils discovered, as may be most likely to lead to the attainment of that desirable object.

By order (Signed) W. Wyllie,
Major A. A. A. General Scinde Force.

Camp, Quetta, 6th September, 1841.

Taking then into consideration all that our short experience of Quetta and its neighbourhood has shown, I should be inclined to conclude that its climate and other causes have proved it most pernicious to the health both of Europeans and natives, as numbers have had their constitutions dreadfully broken up, the effects of which they may never recover.

In my official letter, dated Shereewab, I explained the impossibility of my being able to make out any regular report of the climate of Quetta, and I have now only to repeat, that I have no other means than from memory, which I must urge as an excuse for the extreme poverty of those remarks, and the information I possess on the subject.

Kelat, 3rd October, 1841.

2

Statistical Report on the encampment, Head Quarters Scinde Force at Quetta. By J. Patch, Esq. Surgeon 21st N. I. and Superintending Surgeon S. P.

The ground on which the Head Quarters of the Scinde Force are at present pitched, is a gradual slope of considerable extent, being one of the vallies formed by the divergents of rocky mountainous ranges at the top of the Bolan Pass, about 49 miles from it, and in about 30 north latitude, and 66° 50′ east longitude, the elevation above the sea is upwards of 5000 feet; none of these ranges appoach nearer the camp than 4 or 5 miles, generally they are at a much greater distance and are between 2 and 3000 feet in height.

The camp is very considerably elevated above the town of Quetta, distant something more than a mile in a south-westerly direction, and a spot occupied by the political agency where are also situated the ordnance stores, and the projected lines of the 20th Regiment, N. I. The whole of this latter locality is, as far as can be judged by the eye, the lowest spot in the neighbourhood. A stream of water issues at a gorge in the north-eastern corner of the valley, and supplies the whole of the slope with water in moderate quantity and of a very tolerable quality. The soil is a light coloured alluvial deposit, mixed with calcareous and silicious matter, and very much made up of stones rolled and rounded by the action of water.

This ground on our arrival in the early part of April was partially covered with wild flowers, and tufts of southernwood, but since the hot weather scarcely a trace of vegetation remains. Cultivation is not very abun-

dant. In April the wheat was beginning to get into ear, and it was cut in July. More miasma may probably be generated by the quantity of lucerne grown, than by any other kind of cultivation. Having only been here a little more than five months, I can but speak of the climate during that time.

During the whole month of April, the prevalent wind was from a little to the northward of west, with a good deal of rain, and in cold weather, snow remained on the loftier mountain tops until very late in the season, and it was to be found in some of the crevices, even in the month of July.

In the month of May a great change of temperature took place, which in the latter part became rapid, and I look upon the sudden change then, and generally speaking the changeableness of the climate as being very prejudicial to health. All June, July, and August, were very hot, although not perhaps very oppressive. Solar radiation is very great.

The wind during this period was from the westward, sometimes a light air set in from the south-east towards evening, and fogs occasionally prevailed with a sensation of dampness.

The following is a Table of the range of the Thermometer during five months, commencing with the 1*st of April.*

	April.	May.	June.	July.	August.
Minimum	38	53	63	64	62
Maximum	92	104	107	109	107
Mean of Minima	58	75	82	83	69
Mean of Maxima	76	84	97	103	99

I have had very little opportunity of becoming acquainted with the state of health of natives of this part of the country, but as the circumstances under which they are placed differ so materially from those likely to affect troops, I think it need not be particularly attended to.

I omitted to remark that the thermometer was observed in a rowtie, the description of that in general use for native Troops in Hospital, a kind of covering affording but little shelter from the intense heat of the day or severe cold occasionally at night.

Table of the principal Diseases affecting the men of the 21*st Regiment N. I. from the* 1*st of April, to the end of August,* 1841.

	April.	May.	June.	July.	August.
Mean Temperature of each month .	67	79½	89½	93	84
Strength of 21st Regiment	1024	1059	1061	1061	1060
Bowel Complaints	37	27	26	22	27
Fevers	34	31	45	50	111
Rheumatism	10	10	15	15	15
Other Diseases	64	34	47	47	39
Total	145	102	126	134	192
Number per cent under treatment . .	rather more than. 14 pr. cent.	less than 10 pr. cent,	12 pr. cent.	less than 13 pr. cent.	less than 19 pr. cent.
Number of deaths	3	none.	none.	1	none.

From these statements it will appear first with reference to the thermometrical register that the temperature goes on increasing in a somewhat regular manner monthly to July inclusive, but with regard to sudden changes it must be understood that they are of frequent occurrence, and comparatively cold gusts of wind come down from the ranges of mountains around us.

Secondly, That on looking at the table of diseases, there is a great increase in the number of fever cases as the temperature diminishes and this continues to be the case. This brings us to the conclusion that some other cause besides high temperature must be looked to as the main agent in their production, and from all that I can observe I think there is no doubt that fever is endemic at this station. Whether to an equal extent with Guzerat and other similar parts of India, I cannot of course say, as a residence of some years or reference to medical registers, can alone decide the question.

With regard to bowel complaints, the returns of the 21st Regiment do not show that they are of very frequent occurrence or of a serious nature, but although this has been the state of one particular regiment, I am aware that they do prevail very extensively and are exceedingly obstinate in their nature.

Rheumatism, I look upon as another disease which it is of much consequence to notice; if found to prevail at any particular station, that station should be avoided of all others, as it is the disease which causes the filling up of our pension list to a greater extent than any other, and I mention this because I think it likely that the severe cold of winter here may be ex-

tremely productive of it in native Troops. It appears then from the following circumstances, viz. 1st, That bowel complaints are of frequent occurrence and of an obstinate nature. 2nd, That fever is endemic during July, August, and September, and from intense solar radiation and sudden changes of temperature likely to be of a highly congestive nature at all seasons, as far as they have been observed. 3rd, That Rheumatism is to be apprehended from several causes. 4th, There being no apparent immunity from any particular class of diseases and convalescence proceeding slowly in all, that we may conclude that Quetta cannot be considered a healthy place. July and August may certainly be reckoned the most sickly season.

The men during the whole period under consideration, were living in rowties, and their food not particularly good, sufficiently varied, nor had they their usual supply of vegetables as when in India.

The obvious means of meeting and moderating the evils attendant upon a sojourn at this station, will be in the careful adaptation of clothing to the season, most particularly that of warm clothes during the winter and the shelter of houses, due care being had recourse to for their proper ventilation, consistent with the exclusion of violent currents of air; exercise of course will be most indispensably necessary.

The selection of a proper spot for a cantonment is a matter of the utmost importance; I imagine fever prevails in the proportion of five or six to one in the lower camp, (alluded to as the spot occupied by the political residency and projected lines of the 20th N. I.) compared with what may be expected in the Head Quarters camp, situated as described on the slope rising up as before mentioned, and than which I cannot imagine a better place for a cantonment, particularly when it may become sheltered by buildings, &c.

In conclusion I believe it may be considered that the past has been an unusually unhealthy season.

Quetta; *September*, 1841.

3

Medical Report of Moostoong. By A. Wright, Esq., Assistant Surgeon, 25th Regiment, N. I.

Moostoong is situated in 29° 43′ north latitude and 66° 35′ east longitude and is elevated 5300 feet above the level of the sea; the valley of Moostoong is an alluvial plain running from north to south for about eight or ten miles, having high barren hills on each side. The valley is plentifully supplied with good water which is brought from the foot of the

hills, by means of aqueducts; and is scattered over with villages, orchards and corn-fields, the two last particularly about Moostoong.

The troops were encamped at Khoodawut about a mile to the eastward of the town on rising ground of a sandy soil and covered with low camel shrubs; the whole of the ground towards the south-eastern hills is very barren, being chiefly drifted sand towards the west and north, and close to the camp are orchards and cornfields. When the Troops arrived it was in the middle of April; the trees were coming into foliage and the corn was coming into ear, the weather was cold and raw, rain having fallen a few days before and the tops of the high range of hills were covered with snow. From the 20th to 27th of April, the weather continued cold and damp with occasional showers of rain and thunder; on the 28th a thunder storm with heavy rain and hail, the hills were again covered with snow which remained for several days. The thermometer's highest diurnal range 82, lowest at sunrise 52. In May the weather became warmer and towards the end of the month it became oppressive, the wind was generally from the north-west and dust storms. Thermometer's highest diurnal range 94, medium 81, lowest at sunrise 56. In June the heat continued to increase during the day, the nights remained cool and pleasant. Thermometer's highest diurnal range 94, lowest at sunrise 68, medium 81.

The Troops stationed at Moostoong consisted of a Wing of H. M.'s 41st Regiment, 3d Company 1st Battalion of Artillery, and the 25th Regiment N. I., the former occupied houses, the others were in tents.

The following Table will show the average number of Soldiers per cent. under medical treatment during the months of April, May, and June.

		Fevers.	Bowel Complaints.	Other Diseases.	Died.	TotalDeaths
Right Wing H. M'.3 41st Regiment.	May.	7	3	4	"	"
	June.	22	6	4	3	"
	July.	4	5	5	5	8
3d Company 1st Battalion of Artillery.	April.	1	1	"	"	"
	May.	"	"	"	"	"
	June.	1	2	"	"	"
25th Regiment N. I.	April.	10	2	11	"	"
	May.	7	2	7	"	"
	June.	10	2	5	1	

The most prevalent diseases have been fevers and bowel complaints. It would not be fair to ascribe the cause of these diseases altogether to

the climate of Moostoong, as a great number of the cases were contracted either in Cutchee or in the Bolan Pass, and chiefly caused by the sudden change of temperature. Before the troops left Cutchee, the weather was very hot; in the Pass, it got suddenly cold, accompanied with rain, and these were rendered more efficient by such causes as diminish the constitutional powers of resistance, viz. fatigue from loss of sleep and continual long marches, and night duties. The heat of the day keeping up a very free exhalation from the skin, I shall call the predisposing, and associate with it loss of sleep, and fatigue. The exciting, the cold chill of the night, checking this exhalation, and with it associate night duties. The cause will therefore resolve itself, simply to checked perspiration, acting upon bodies with a peculiar predisposition ; this predisposition the effect of climate.

Having been only stationed at Moostoong for about two months, I cannot speak as to the different seasons, but from all I could learn from the natives of the country, the months of July and August are considered by them, to be the most unhealthy ; they seem to think that the climate is good and do not suffer much from sickness. It is reckoned by them far superior to Quetta. The diseases to which they are liable, are fevers and bowel complaints during the hot season ; in the winter they suffer from pulmonary affections. From all I can learn, it bears a considerable resemblance to Kelat as to the nature and physical effects of the climate upon the troops and the people themselves.

In the table it will be observed that the Wing of H. M.'s 41st had the greatest proportion of sick in June, greatest number of deaths in July. This is owing to the detachment that was at Nowsky, and I understand that all the deaths that occurred were men who had been with that detachment.

How far sickness has been caused from the men having been exposed in tents I am not prepared to say ; the soldiers of H. M.'s 41st were in houses or rather huts; they suffered more from fever after they removed into them, and the Medical Officer thought proper to remove them again into tents, when they gradually got better ; the men of the Artillery again were in tents during the whole season, and they remained, comparatively speaking, healthy. During the short time they were under my charge, I frequently had not a patient in hospital, but still I am of opinion that if they had had good substantial barracks, they would in all probability have suffered less in a country where great and sudden changes of temperature take place ; good houses and suitable clothing are absolutely necessary for the preservation of health and a great preventive of disease.

I understand that Moostoong, like all other places in the country, has

been more than usually unhealthy this season on account of the heat being greater than it is in general years.

Camp, Dadur, 26th November, 1841.

4.

Medical Report of the Fortress of Kelat. By A. Wright, Esq., Assistant Surgeon, 25th Regiment, N. I.

The fortress of Kelat is situated between 29° North latitude and 65° to 67° East longitude, and is elevated 6000 feet above the level of the sea. The town and citadel are built upon the extremity of a high broken ridge of hills sloping down from the south-westward; the citadel is built upon its north-western extremity, where it falls abruptly into a narrow alluvial valley below; the citadel rises two hundred and twenty feet above the valley, and a village encircling its north eastern base stretches outside the walls to the southward. In front and to the left from the northern angle of the fortress, arises rather abruptly a low irregular broken hilly ridge, which gradually ascends to the westward. Immediately to the east of this from north to south skirting the ridge and south-eastern face of the fortress, stretches an alluvial plain from two to three miles in breadth. This plain is quite level, and is thickly strewed with walled orchards and villages as far as the high south eastern hills.

The town is surrounded with a high mud wall with circular bastions at intermediate distances; the houses are all built of mud, and the streets are narrow and confined and in a filthy state; good water is abundant; the stream that supplies the town and valley rises out of the foot of the south eastern hills.

The surrounding country is irregularly mountainous, interspersed with gravelly ridges, alluvial valleys, and plains, and, where uncultivated, is covered with low dry looking camel shrubs. The hills are formed chiefly of limestone rocks, and are plentifully interspersed with irregular pieces of flint.

The grains that are chiefly grown are wheat and barley, both very good of their kind. The gardens produce melons of excellent quality, apples, apricots, pears, mulberries, plums, and grapes. The country is miserably deficient in esculent vegetables, the whole catalogue consisting of cucumbers in season, turnips and carrots of a very inferior tasteless kind, onions, brinjals, and one or two bad kinds of badgi.

In regard to the climate, I can only speak for the three months I have been here. In July the heat during the day was very oppressive, mornings

and evenings pleasantly cool; from the 25th to the 31st, cloudy, with thunder towards evening, and on two occasions rain fell; the inhabitants generally expect rain at this season, but they say that very little has fallen for the last three years, and on this account the heat this season has been much greater. Wind during the month, generally from the south-west. Thermometer's highest diurnal range 89 to 91½; lowest at sunrise 73. August, the heat this month was not so oppressive; on the 14th, 15th, 16th and 17th, there was thunder with light rains, mornings and evenings cloudy and hazy, wind during the month generally from the west. Thermometers highest diurnal range 79 to 88; lowest at sunrise 72 to 80½. September, the heat began rapidly to decrease, and the mornings and nights were very cold, the atmosphere during the month being clear and dry, winds blowing steadily from the north-west, thermometer's highest diurnal range 72 to 76; lowest at sunrise 35½ to 68. I may observe that the range of the thermometer was taken in a good substantial building occupied as a temporary hospital.

The troops stationed at Kelat, consisted of a detachment of the 3rd company, 1st Battalion of Artillery, and the 25th Regiment; the men occupied good houses in different parts of the town, and were well protected from the excessive heat.

The following table will show the average number of soldiers per cent, under medical treatment during the last three months.

		Fever.	Bowel Complaint.	Other Diseases.	Died.	Total of Deaths.
Detachment of Artillery.	July.	1	"	"	"	"
	August.	1	"	"	"	"
	September.	"	"	"	"	"
25th Regiment, N. I.	July.	32.1	1.5	5.4	3	"
	August.	32.2	1.3	3	6	"
	September.	22.2	1.1	2.2	1	10

The most prevalent diseases have been fevers and bowel complaints, and the greatest number of sick were in the month of July and August. Since my arrival here I have instituted many inquiries with the view to obtain some information as to the nature and physical effects of the climate upon the people themselves, and the diseases to which they are liable, &c. From all I could learn, this place is esteemed by them the healthiest spot in this part of the country; and from what I have seen, their diseases are few and simple, chiefly intermittent fever and bowel complaints. The seasons that these diseases prevail, are during the months of July and August;

the rest of the year is considered by the natives to be very healthy. This season is considered by them to have been a peculiar one, much more sickly than usual, and they attribute the cause to the excessive heat.

The fever has all along been of the intermittent form, and, generally speaking, mild; several cases were complicated with bowel complaints. In estimating the number of sick, it must be recollected that the 25th Regiment had suffered severely from fever and ulcers whilst stationed at Kotra in Cutchee, and also during the march up the Bolan Pass. In the month of May, whilst stationed at Moostoong, the men suffered considerably from bowel complaints. With regard to the causes of the bowel complaints, I consider the most essential were, the great diurnal variations of temperature with a high range of the thermometer acting upon bodies possessing a peculiar predisposition.

The causes of the fever were, no doubt, malaria, combined with the great solar heat, acting on bodies previously predisposed; a great many deductions must be made for ephemeral attacks from exposure to the sun, and a number from relapsed intermittents.

In the cold season I have no doubt that pulmonary complaints will be of frequent occurrence. The localities in the vicinity of this station cannot be greatly instrumental in the production of disease. The cultivated lands north and east, are not sufficiently irrigated, and the absence of jungle in the principal valleys, so insures us against the decomposition of animal and vegetable materials, that there is exemption from all noxious exhalations; with these advantages, we might look to the climate as likely to be more than usually healthy. To Europeans of temperate habits, the climate is eminently favourable, in proof of which, I may mention that out of 25 European Soldiers and 10 Officers only two of the former had slight attacks of fever, from which they rapidly recovered. Individuals who were unhealthy in India, have enjoyed good health here; that the climate does not tend to weaken or subdue the constitution, is, I think, evinced by the fact of the Europeans all looking healthy and robust. Again with regard to native troops, we may reasonably conclude, and our experience goes to confirm the inference, that Kelat is never likely to be a healthy station for the natives of India, the variation of temperature being too great, and the extreme cold in the winter season must necessarily prove most injurious to the health of the inhabitants of a hot climate, although the prophylactic means of good housing and plenty of warm clothing, might do much in warding off its effects.

Camp, near Moostoong, 12th October, 1841.

5.

Medical Report on Kotra. By W. S. Babington, Esq., Assistant Surgeon, Left Wing 1st Regiment, Light Cavalry, Lancers.

The climate of Kotra generally, as regards the troops, is as far as my experience for eight months will allow me to judge, exceedingly bad.

The average number of soldiers per cent under medical treatment from the 1st of February 1841 to the 31st August 1841, was, during the best months, 27 per cent, and during the worst, 112.

The earliest part of the year, or the cold weather, was, by far, the most healthy, and the months from June to the end of August, the most fatal. From inquiries amongst the natives of Kotra, I could not ascertain that the past season has differed from former ones.

The mortality during the last four months out of 175 men has been 13.

The accommodation afforded to the men was most excellent, all the guard rooms being good, and the men's huts roomy, and well defended from the sun by thick mud roofs, and from the hot winds by mud walls before their doors; and, had they not had such protection, the fatality must have been very much greater.

The months of May, June, July, August, proved the most unhealthy, but at the same time, I think it right to say that I have heard that October and December were also equally so; the cause for the sickness during the period I have first mentioned is, I believe, to be from the intense heat, not only of the sun but also of the wind.

Kotra is in my estimation, a most unwholesome station for troops, not only on account of the climate, but from the fact of the camp being situated in one of the lowest spots around, and surrounded by jungle.

In answer to the last clause, I have only to say that every precaution as regards clothing and protection from the weather was taken, nor was any thing left undone that could in any way add to the comfort of the men, nor is it in my power to suggest any method by which sickness at Kotra could be avoided.

6.

Report on Bhag. By Captain G. Boyd, 2d Grenadiers.

I arrived at Bhag in command of a detachment of 270 Infantry and 100 Scinde horse, on the 23d April, the weather then delightfully cool in the morning and evening; maximum of thermometer 90 in tents. The weather became close about the 10th of May during the day and night, but the mornings still cool; wind blowing from the north-west; thermome-

ter in a house 87. The climate generally good, from what I could learn from the natives, and I believe the different detachments stationed have found it so, with the exception of being attacked by small sores in July, from eating an excessive quantity of musk-melons, to which the natives attributed it.

Not the means of answering this question. (2)

The best season in my opinion for troops, is from October until the beginning of April, when it becomes warm shortly after sunrise, but to the end of that month troops might without inconvenience from the heat, remain in tents; the last season was a favourable one, from rain having fallen on the 27th April, thus delaying the approach of the hot winds.

The number of deaths out of 270 of the 2d Grenadiers were 5, four from coup de soleil and one from fever. Two sowars of the Scinde Irregular Horse died, one from fever and one from coup de soleil.

During the whole period of my stay at Bhag, the detachments were in routies, but in the day they sheltered themselves in temples and sheds thrown up for the purpose, but of very slight construction. Had good substantial barracks been built, I should think there would be but little sickness, except from the danger of being struck down by the powerful effects of the sun, which in all cases caused almost sudden death. Fever was not prevalent in the town of Bhag, and I had but little of it in the hospital.

I cannot state as to this question. (6)

Ditto Ditto (7)

In the middle of the month of May, the weather increased continually in closeness; thermometer rising to 94 in the house with closed doors and watered tatties; in tents it became 120 and the wind changed to south-west, still blowing fiercely hot, but with a moisture which prevented water cooling as with northerly winds. This wind is considered by the natives most pestilential in its effects, and causing as many deaths as the sun during the day; it prevails all over Cutchee, men suddenly becoming sick and dying in a few hours. The heat and closeness continued to increase, particularly at night, so much so, that our feelings became scarcely bearable, but still for a short time in the early morning there was a coolness, sufficiently so to enable one to have the men at drill in white jackets for half an hour. This fearful heat continued until the end of July, when a heavy fall of rain for three hours took place at night, after which our miseries ceased, for the place became bearable and pleasant in the morning until my departure on the 25th September. During the whole of this period I received fearful accounts of the effects of the heat from

the head Quarters of the regiment at Kotra, whilst I only lost five men from the effects of the sun, and two from fever, out of the whole detachment. The men were encamped on an open place in tents, but during the day took shelter in temples and sheds; the sick which amounted to an average of from 12 to 18, were under cover in a musjid. Thermometer in shade during May, June, and July, 120. A number of sick men who came in from Kotra in August, described the change as most pleasant, and said it was better to reside at Bhag and bear the heat of tents, than die from fever in huts at Kotra. The greatest heat I experienced was on the 18th June, when it rose to 102, and at night on opening the doors and admitting the hot air, it rose to 107.

The inhabitants of Bhag report that it is considered the most healthy place in Cutchee and much cooler than either Dadur or Kotra, which is ascribable to its distance fron the hills; it is also less subject to ulcers than these places. As far as regards health it is decidedly the best spot for a military post, and the only objection which exists (a scarcity of water) s now, I understand, done away with by the river being allowed to run free.

Camp, Dadur, 12th November. 1841.

7

A reply to Queries concerning the Statistics of Shiakarpore,. By Assistant Surgeon G. F. Forbes, Left Wing, 8th Regiment N. I.

No. 1. The climate of this station in so far as I may judge from the limited period to which my experience of it extends, is not unfavourable to troops.

At the present season there is a very material difference in the temperature of the days and nights (the latter being very cold); and it is chiefly in this particular that the climate seems to influence the health of the sepoys, giving rise to the prevailing diseases, viz. intermittent fevers rheumatism and affections of the chest.

No. 2. During the best months of this year, viz. from March to September, the average number of sepoys under medical treatment amounted to 21 per cent. per mensem.

The worst months extend from October to March. From the 1st of October up to this date, the average number of sepoys under medical treatment is 36 per cent. per mensem.

No. 3. There are but two seasons, the hot and cold, the former commencing in April, and lasting till about the end of September; the latter from the end of September, until April.

From the hospital returns and from inquiries made by me of Captain W. J. Browne, commanding left wing, 1st Regiment, Native Infantry, who has been here since the 13th of March 1841, the hot season would seem most favourable to the health of the native soldiers.

No, 4. No deaths have occurred for the last four months.

No. 5. The accommodation for the troops at this station is decidedly bad. The lines consist of long, low, mud huts, indifferently built and quite inadequate to protect the soldier either from the heat of the warm season, or the inclemency of the cold one, and I feel convinced that a great deal of the sickness, that has hitherto prevailed, would be prevented by substituting in their stead barracks built with brick, and of a proper height and construction,

No. 6. This station is most unhealthy from the end of September to the end of November. The reasons, I attribute, are, first, the malaria arising from the decomposition of the sediment left after the inundation of the river Indus. Secondly, the rapid change from extreme heat to extreme cold; particularly at night. Thirdly, the want of proper houses for the sepoys.

8

Statistical Report of Sukkur. By J. Jephson, Esq. Assistant Surgeon.

1. Climate — The climate of Sukkur, is very oppressive; the atmosphere is hot, dry, and loaded with electricity, particularly in the months of July, August, and September. It would seem, as if the solar beams were decomposed by the rock and soil, and thereby producing the electrical state of the atmosphere. The quantity of rain which has fallen this season is very small, only two slight showers in July.

From what I have observed during the past hot season, I should say, it is a healthy climate for natives, but a very trying one to Europeans, and always, an oppressive one in the hot season, arising, I doubt not, from the highly electrical state of the atmosphere. The unhealthy season appears to commence in October, and continues till the end of November, at which time, the river is falling, after the annual inundation; when from the powerful rays of the sun, acting on the decayed vegetable matter, and the clayey absorbent detritus brought down by the river, malaria is rapidly generated, and hence the cause of the prevalence of fever during the months of October, and November. This fever is variable in its character, at one time intermittent at another remittent; the latter often assuming a typhoid character. These months then may be considered, as the unhealthy ones; but for these, I should say this is a healthy climate.

2. For the period of six months, that I have had charge of the 1st Grenadier Regiment N. I. the average portion of those, who have been under medical treatment, in the first four months, June, July, August, and September, is about 6 per cent per month, and the average for the month of October and November, will not be more than 14 per cent. per mensem.

3. If the troops can be protected during the months of June, July, August and September, and not marched from station to station, nor exposed to the great heat of the sun, the period embraced in these months may be considered healthy for native troops; the most frequent disease during these months is coup de soleil. In the past season I had several cases, but only one died, and this was more from old age and debility. The cases of fever during this hot season were generally of a very slight character, arising principally from debility, by exhaustion.

4. Since I have had charge of the Regiment only three deaths have occurred, and one of these, a case of small pox, brought in from Khyapoor while the detachment was stationed there.

5. The lines occupied by the sepoys at the present time are not at all adapted to such a climate as that of Sukkur. They are merely built of reeds, and plastered over with mud, and the roofs are formed of the same material, and the houses are much too low. The heat was so great during the past hot season, that the sepoys preferred going into the date grove, on the bank of the river, during the heat of the day when not on duty.

6. The periods when Sukkur is the most unhealthy are the months of October and November; I am unable to speak of the cold season.

7. The selection of the present encampment by Dr. Don, is a very judicious one, as experience has proved; it is situated on a limestone formation, 50 feet above the level of the bed of the river, and at some distance from its bank, which in a great measure places it out of the reach of malaria to any extent, and thereby much sickness is avoided. No situation in the vicinity of Sukkur could have been better chosen than the one selected by Dr. Don. The distance for the sepoy to fetch water is trifling, and an excellent bazar has been formed between the encampment and the river, which is well supplied with vegetables, — so necessary and so conducive to the health and well being of native troops, and contributes much to the healthiness of Sukkur for sepoys.

I have observed during this hot season that in the cases of fever and

also in other diseases, the human body is affected in a remarkable degree, during the different phases of the moon: the atmosphere about this time becomes most oppressive and depressing to the human constitution,—particularly near the full moon. But my observations have not been sufficiently minute to enable me to enter more fully upon this fact; I can, however, venture to say, that, so often as I have taken notice, I have found that the paroxysms of the fever during the springs were generally more violent about mid-day, than at any other time.

Camp Sukkur, November 11, 1841.

9

Statistical report of Sukkur. By. E W. Edwards Esq. Surgeon 23rd Regiment N. L. I.

1. Climate. The climate of Sukkur is very dry, and for six months in the year very hot. From the time the sun reaches the equator in the vernal, till his return in the autumnal equinox, the heated state of the atmosphere is continuous, and excepting perhaps a thunder shower in July, no rain falls during this period. From the 21st September the heat gradually becomes less and less, till in the month of January the cold is considerable. Whatever rain may fall during the year, which is always very scanty, generally falls between December and March.

The climate is decidedly healthy, excepting for about two months of the year, namely October and November, when from the drying up of the country after the annual inundations and the very great falling of the river, a large surface of mud becomes exposed to the action of a powerful sun. Malaria is thus generated, which affecting a large portion of the community, intermittent fevers become very prevalent: — excepting these two months, the climate is dry, and healthy.

2nd. The average portion of the 23rd Regiment N. I. under medical treatment during the best months, has been a little more than 6 per-cent per mensem; while the average number of the worst months, has been upwards of 12 per-cent.

3. If during the hot months of May, June, July, August, and September, the troops can be kept under good shelter, and not marched about the country, nor exposed to the intense heat of the climate while the sun is above the horizon, the period embraced by those months, may be considered the most healthy for the natives. Coup de soleil is the most frequent disease at this period, and many sepoys die when exposed to the direct influence of the solar rays.

The last season has been in all respects like the preceding one.

4th. Out of the whole regiment consisting of 800 men, there has not been a single death since February last.

5th. The lines formed for the sepoys are very flimsy, and not at all adapted for such a climate. They are made of reeds thinly plastered over with mud, while the roofs composed of the same slender materials scarcely exceed a couple of inches in thickness. The thermometer in them in the hot weather averages 110° throughout the day, and sometimes is as high as 118° and 120°.

6th. The months during which Sukkur is most unhealthy, are, as I before stated, October and November, but the extreme cold of December and January causes frequent cases of congestive fevers, especially with determination to the lungs.

7th.. The camp has been most judiciously selected, and is pitched on a ridge of limestone hills, 50 to 70 feet above the level of the river. It is thus raised in some degree above the malaria, damp and fog of the drying up bed of the river; and much rheumatism, fever &c. are thereby escaped and much unwholesomeness avoided. After three years experience Sukkur has been found the most healthy spot in the whole of Upper Scinde.

The absence of periodical rain, the very small quantity which falls throughout the year, the very dry state of the atmosphere, the elevated site on which the camp is situated together with an inexhaustible supply of good water, and an abundant supply of excellent food, especially fresh vegetables, which to a sepoy is a matter of the first importance to his general health, all combine to render it healthy. I may remark here, the lunar influences at the phases of the moon are very powerful, producing atmospheric changes most oppressive and depressing to the human constitution, and I have generally observed that to whatever ailments the sufferer may be subject, they are brought prominently out on these occasions. The climate is too hot for European soldiers during six months in the year. It is as much as an officer can exist under with every comfort and convenience which his situation enables him to collect around him.

Camp, Sukkur, 10 *November*, 1841.

Article VI.

History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment during the monsoon of 1841, *when quartered in the Colabah barracks, Bombay.* By Arthur S. Thomson M. D. Assistant Surgeon, 14th Light Dragoons, lately 17th Foot.

Presented August, 1842.

Preliminary Remarks. — The 17th Regiment landed at Bombay from the Affghan campaign in March 1840. The Regiment was then divided; one wing was left at Bombay, the other sent to Poona.—In June 1841, the wings which had previously changed stations were united in the barracks at Colabah, until September 1841, when the Head Quarters embarked for Aden. Disease and death became prevalent among the men in June, and on the departure of the Head Quarters for Aden, nearly two hundred men were left sick. The detachment left at Bombay were shortly after, in consequence of the sickness, moved into the Town barracks, and from that, into tents on the esplanade. On the 27th October, 196 sick were embarked for a month's cruise. The detachment remained in tents on the esplanade at Bombay until the end of February, when they marched to Poona. The Head Quarters during their trip to Aden lost several men, and landed there with nearly 50 sick, having embarked without one man in hospital.

Nature of the monsoon.—The monsoon of 1841, proved extremely unhealthy at Bombay and over all India. * The following table will show the temperature and quantity of rain which fell during the different months in Bombay.

Months.	Quantities of Rain in Inches	Average temperature.		
		Maximum.	Minimum.	Mean.
	In. cents.			
June	22 62	85	82	83½
July	19 23	83	78	80
August	19 81	80	78	79
September	1 42	83	78	80
October	,, ,,	86	81	83½
November	2 45	84	76	80

* *Note by the Secretary.* — This table has been filled in from the records of the European General Hospital. As the sources of radiated and reflected heat

On the prevalence of fever and other diseases among the men.

			Total admissions.
In June	55 fevers were admitted	and 68 other diseases	123
" July	136	136	272
" August	165	80	245
" September	187	78	268
" October	375	79	454
" November	180	112	292
" December	180	117	297
" January	50	85	135
" February	38	53	91

It will be observed that the number of admissions from fever increased until October, when the large number of 375 cases was admitted. The number of other diseases admitted was comparatively small until the months of November and December, when the effects of the fever caused dysentery, &c.

The intensity of the fever. — From June until February both at Aden and Bombay, 1366 cases of fever were admitted of which 58 died, which is about one death for every 23 cases of fever treated. This proportion of deaths among fever cases is very large, 1 death out of every 50, 60, or even 100 admissions of the slight fever which drives soldiers into hospital, is about the average.

On the influence of the different months on the intensity of fever.

In June	1	case of fever died out of	every 8	admitted.
July	1	Do.	27	"
August	1	Do.	12	"
September	1	Do.	17	"
October	1	Do.	20	"
November	1	Do.	90	"
December	1	Do.	180	"

The fever was most intense in June, August and September. The extreme intensity of the cases in June, illustrates what is often observed in epidemics, that the cases which occur at first are often the most severe.

On the duration of the recoveries from fever. — About 13 and in some stations 8 and 10 days, is about the average length of time soldiers

abound more in the locality of that hospital than in Colabah, the results are probably higher than they would have been, had the observations been made in the hospital at Colabah.

admitted with fever are detained in hospital; but in the present fever the average residence in hospital was different in different months, but every instance exceeding the above average, thus: —

In June the recoveries were on an average 20 days in hospital.
" July .... Do. ..... 16 ..... Do.
" August ..... Do. ..... 20 ..... Do.
" September ..... Do. ..... 27 ..... Do.

and in October so completely deteriorated were the constitutions of the men, that they were unfit for duty for many months, and even the duration of the cases given in June, July, August and September, is only an approximation to the true duration, as some men, although discharged from hospital, were convalescent in barracks in consequence of the crowded state of the hospital.

The duration of the fatal cases. — The following table will show the average age of 58 fatal cases of fever, and their duration during the different months.

Months.	No. of deaths.	Average age.	Average duration of Sickness.
June	7	28 years	8 days
July	5	23	12
August	13	25	7
September	11	24	13
October	18	24	7
Nov. Dec. and Feb.	4	30	16
Total Average	58	25½ years	10 days

From the above it will be observed, that 7 days was the shortest average duration of the fatal cases, and these cases occurred in August and October. 10 days was the average period in hospital of all the fatal cases; this is scarcely one-half the duration of a register of some fatal fever cases I have got, but which cases were in several instances complicated with organic disease.

Of the 58 fatal cases.

2 Died on the 1st day they were in hospital.
3 ..... do.... 2d day..... ..... do.
1 ..... do.... 3d ..... do.
5 ....,... do.... 4th ..... do.
3 ..... do.... 5th ..... do.
9 ..... do.... 6th ..... do.

5 died on the 7th day they were in hospital.
8 ..... do. ... 8th ..... do.
4 ..... do. ... 9th ..... do.

40 deaths out of 58 occurred therefore before the tenth day the men were in hospital.

It will be seen in the above table that the average age of the fatal cases was $25\frac{1}{2}$ years; this shows that all were not young men, and that on an average most of them had been about $3\frac{1}{2}$ years in India. But the number of young men who died was as great in proportion to the strength as the older soldiers, for out of the 58 deaths, 16 were soldiers under 20 years of age, and therefore just arrived in the country. The fatal cases in June were old men compared to the other months; if the doctrine of seasoning held good, these men ought to have resisted the climate longer than the young men.

Abstract of two fatal cases of fever.

Having briefly stated the chief characters of the fever, I shall now insert an abstract of two fatal cases.

Case 1st. — Private T. O'Keef, aged 20 years; in India 6 months; admitted 7th October 1841, died 14th October; duration of disease 7 *days*. On admission at Colabah, pulse 118, scarcely perceptible; drowsy, and sinking down in the bed; skin cold and features sunk; tongue moist and furred. Next morning the report was, pulse 126, scarcely perceptible; bowels open with castor oil; skin cool, no pain; great prostration of strength. During the day yesterday indistinct remission of fever, when he had a large dose of quinine. *9th October.* Pulse 120, small and feeble; all the characters of sinking of the powers of life. *10th October.* Pulse 110, small and feeble; appears better; took some nourishing soup with difficulty; skin cool. *11th October.* At noon yesterday severe increase of fever; this morning pulse scarcely to be felt or reckoned. 13th no change; is sinking. 14th. Expired at 10 A. M.

The treatment consisted on admission of the application of a large blister to the head and neck, hot water to the feet, frictions to the surface and the exhibition of the carbonate of ammonia and other stimulants; whenever the least remission of the fever occurred as on the 8th and 10th, large doses of quinine were given with nourishing soup. Bowels kept open with gentle laxatives.

On examination of the body, serous effusion was found in the ventricles at the base of the brain and along the spinal cord; congestion of blood in the internal organs of the body.

Case 2d. Private William Cope, aged 21 years; in India 2 years; duration of disease 4 days; admitted on the 9th October in a state of great prostration of the powers of life, and on being questioned said he had slight headache, but no other complaint; pulse 116. 10th, *October*, slight remission of fever yesterday, when he had a large dose of quinine; it lasted only two hours. Pulse now 126,

very weak ; no headache ; bowels freely open ; severe pain complained of in the abdomen. 12th. Extreme collapse followed the application of 60 leeches to the abdomen, that he almost sunk ; pulse this morning 120 and very small ; tongue furred and dry ; skin covered with a cold perspiration. 13th. Pulse intermitting ; occasional delirium; no pain ; skin cold ; as the day advanced he was worse, and expired during the night.

On examination of the body, congestion of blood was found in most of the internal organs, and a large effusion of serum on the base of the brain and along the spinal cord.

The treatment consisted in the application of 120 leeches to the head and abdomen, the continued exhibition of stimulants, quinine, laxatives, calomel and hyoscyamus.

Remarks on the cases. — These two cases will give an idea of the nature of the disease : the absence of any thing like a distinct intermission and the great prostration of the vital powers characterized all the fatal cases. If a distinct intermission was observed, large doses of quinine were immediately given, and these cases almost always did well. It will be observed that in both the cases given, congestion of blood was found in the internal organs ; this effect so characteristic of cholera, yellow fever, and almost all diseases which prove rapidly fatal, would lead us to infer, that general blood-letting might have proved beneficial. Depletion tried in some cases, did not succeed, in some cases blood could not be got to flow, and the injurious effect of local depletion was often very obvious. Among the men of the 94th Regiment, who were quartered in the barracks on Butcher's Island, and among whom a fever similar to that in the 17th Regiment occurred, general bleeding was freely tried, and many of the cases proved rapidly fatal. During the months of November and December, the type of fever was so changed, that a small bleeding was very beneficial. In the fever which occurred among the marines of the Endymion, bleeding was highly injurious, and stimulants constantly required. These circumstances are stated, because it is a common opinion, that internal congestion invariably indicates depletion ; this is in a great measure correct, but it is stated by Armstrong that depletion must not be made until a re-action appears, and even then it is dangerous if the vital powers are much depressed. In the present fever, the greater part of the blood in the body was congested in the internal organs ; a very small portion of it kept up the powers of life by circulating, and if this was withdrawn by bleeding the patient would sink :— to show the correctness of these remarks I insert another case.

Fever case No 3. *to illustrate the injurious effect of depletion :—duration of sickness* 30 *hours.*

Private Thomas Footed, aged 25 years ; in India 2½ years ; of a muscular frame ; admitted on the 18th June 1840, with fever of a low type, and with

symptoms of congestion of all the organs, was bled to 16 ounces, and had sixty leeches applied to the head and a blister to the neck; a dose of calomel and antimonial powder and an ounce of wine to be given every second hour.

On the 29th the report is, pulse 125, weak; no remission of fever; no sleep; bowels open; respirations frequent and labouring; no irregular sound from lungs; great prostration of strength. A blister was applied to the chest, five grains of calomel and two of opium given, and wine continued every second hour.

4. P. M. 29th. Blister risen well; heart's action and that of lungs increased; pulse 128, small; skin hot and moist; no clammy perspiration.

9. P. M. 29th. Is much worse; pulse scarcely perceptible; had slight delirium; skin covered with cold perspiration. Expired at 10 P. M. on the 29th June.

Sectio Cadaveris. Body in good condition and muscular; slight congestion of the lungs and liver; considerable effusion of water on the base of the brain and along the spinal canal.

Remarks.—The increased action of the chest and lungs was probably produced by the effusion of water along the spine, preventing some of the nerves of respiration from performing their functions.

In the treatment of all the cases, the object was to excite the powers of life, and when the blood began to circulate, if necessary, to deplete. Many men died from the extreme sinking which followed a paroxysm of fever, and many men recovered from the verge of the grave by wine, soup, &c. I will conclude this section by inserting a recovery from fever.

Case No 4. *Recovery from fever. Severe case.*

Private W. S. aged 22 years; in India 3 years; sanguine habit. Admitted on the 1st July 1840, complaining of general debility, &c. A vein was opened but he fainted before many ounces slowly came, and no more could be got; had an emetic and purgative; he afterwards complained of headache and had 60 leeches applied to the head, and a diaphoretic mixture constantly given. *2d July*, Pulse 84; skin hot and moist; no pain. Continued the diaphoretic mixture. At night occasional delirium; skin moist and hot; bowels open; eyes wild; pulse 124 soft; complains of abdominal pain. A blister was applied to the neck and head, and a draught composed of wine, Tinct Morph. Muriat. and Tartar Emetic given; the head to be rubbed over with strong Tartar Emetic ointment.

3d. Slept a little after draught; pulse 120; skin moist; bowels open; much irregularity in his manner. Diaphoretic mixture and wine every second hour with 40 drops of Tinct. Muriate of Morphia at night.

4th. Pulse 79: skin moist; eruption on head from the antimony; slept none; bowels open; occasional delirium. The wine and diaphoretic mixture continued; at night, 5 grains of Calomel and 5 of Hyoscyamus.

5th. Slept well last night, no fever; pulse 76. 6 grains of Quinine every third hour. *Vespere.* Calomel, Antimony and Hyoscyamus.

6th. Fever with delirium came on yesterday at noon, and has continued since, had 60 leeches to the head, and this morning pulse 109; skin hot and dry; head warm and temples throbbing; 30 leeches applied to the head and diaphoretic mixture given.

7th. The most fearful collapse followed the application of the leeches and the fever; skin covered with cold perspiration and pulse scarcely felt. Brandy and carbonate of Ammonia given every 10 minutes. Had 40 drops of Tincture of Morphia last night and slept well. Pulse 106, this morning; skin cold and clammy; no pain; the brandy and carbonate of Ammonia to be continued.

8th. Strength impaired; Pulse 120: skin hot. Diaphoretic mixture to be given with wine; bowels open.

9th. Pulse 96; skin hot and moist; no pain; occasional delirium.

It is useless to detail this case further, no violent paroxysm of fever occurred again, although there was occasional slight increase of fever. He was convalescent on the 31st July, but was not fit for duty until the 11th September 1840.

Remarks. — It was fortunate for this patient that nature resisted further depletion, on admission. During the hot stage of fever, depletion was indicated, but the injurious effect of the leeches was great, and in this case nearly fatal. As the months advanced, leeches could not be used with the freedom done in this case. The anodyne was a doubtful remedy, but the total want of sleep, he stated he had, appeared to indicate it.

On the causes of the fever, I am inclined to think, that the cause of the fever assuming the fatal type and extreme prevalence, was in a great measure caused by the barracks at Colabah being totally unfit for European troops during the rainy season, aggravated also by the monsoon of 1841, proving extremely unhealthy; but as no science adopts opinions unsupported by facts so easily as medicine, and as this observation is more peculiarly applicable to the exciting causes of disease, I shall therefore here briefly state the grounds on which this opinion is found.

1st. The barracks at Colabah are built almost on a level with the sea. 2nd. The floor is formed of a deliquescent stone, which in damp weather, is always wet, so that it is impossible for the men to keep their feet dry. 3rd. During the rains the water stagnates round the barracks, there being no proper facility for running it away, so that the ground becomes a perfect marsh. 4th. The sea recedes so far as to expose to the sun half a mile of shore covered with slime and marine vegetation; and as the privies are situated here, the smell is often disagreeable.

In proof of the opinion that the barracks were the chief cause of the fever, the following facts may be brought forward.

1st. I had medical charge of the depot of H. M.'s troops, which men occupy barracks not three hundred yards from the barracks occupied by the 17th Regiment, and only two or three fatal cases of fever occurred out of near 200 men, during the monsoon.

2nd. 20 cases of fever occurred among the Officers of the 17th Re-

giment, the disease had a distinct remission, and was easily checked; no case proved fatal.

3rd. On the removal of the 17th Regiment to the Town barracks, the disease assumed a distinct intermittent type. 4th. A detachment of recruits of the 94th Regiment which were quartered on Butcher's Island, where I am informed the barracks are in some respects similar to those at Colabah, were attacked with an extremely fatal fever, which was checked by their removal into the Town barracks. 5th. The 6th Regiment during the commencement of the monsoon were stationed in the Town barracks, and they lost few men with fever in comparison to what the 17th lost.

Setting aside all these facts: is it to be expected, that men occupying barracks where they cannot walk about without rendering their feet damp could be healthy?

Some may think that intemperance, which is often such a fertile cause of disease in India, may have assisted in producing the severity of the fever; but I am sure that I am right in stating, that in the present case intemperance had little or nothing to do with it, for young men just arrived from England without the means of procuring spirits, were apparently as liable to the disease as the old soldiers: and of men under 20 years of age it is stated that sixteen died.

On the benefit which resulted from sending the sick to sea. One hundred and sixty six sick, all of them having suffered under fever, and 12 of them labouring under chronic dysentery, the result of the fever, were embarked on the 27th October, and cruised northward to the Persian Gulf, and arrived at Bombay on the 24th November. During the cruise the weather was pleasant, the lowest temperature was 74 and the highest 86 Fahr.

On the benefit which resulted to the fever cases.—The sick embarked emaciated and without appetite, soon began to eat and get strong; almost every man had a paroxysm or two of fever during the cruise, but mild in its nature compared to what they had at Colabah. Thus of the small detachment of healthy men left at Bombay, one man died of fever out of about 100 cases, during the time the sick were at sea. While at sea out of above 200, no case proved fatal, and few cases were severe. On the arrival of the sick at Bombay, 50 men who had been without fever for three weeks during the cruise were discharged, and before a week had elapsed more than two thirds of them returned into hospital with fever.

The embarkation of the Head Quarters for Aden in September and the short sea cruise, had a beneficial influence by changing the type of the fever.

On the benefit af the sea cruise as a prevention of dysentery following fever. During the cruise about 20 cases of dysentery occurred among the men; at first I was inclined to think that in this respect the sea cruise had been injurious, but on arrival at Bombay I found that about 21 cases of dysentery had occurred out of the small detachment of comparatively healthy men left there; out of the 50 men discharged on their arrival at Bombay who had scarcely been sick during the whole cruise, many of them were admitted with fever complicated with dysentery. I am therefore inclined to think even with these limited facts, that as a prevention of dysentery, the cruise was beneficial.

Out of the 12 cases of chronic dysentery embarked, three died; none of them received any very obvious benefit from the cruise.

On the injurious effects of the fever. 1*st In producing dysentery.* It will be observed on referring to the statement detailing the prevalence of fever and other diseases during the different months, that in November and December the number of other diseases admitted, increased in a very large proportion compared with the previous months. In October a few cases of dysentery occurred, but when the cold nights of November and December came, dysentery became more prevalent, and 130 cases were admitted during these two months, and 23 died. This large mortality out of 130 cases of dysentery was in some degree produced by the exhausted constitutions of the men not allowing free blood letting, and many of the cases were chronic, in every respect, from the commencement of the disease, the disorganization of the mucous membrane having gone on during the fever.

2nd. *From the liability of the fever to occur again.* The second injurious effect of the fever is the great tendency of the disease to relapse. During the hot season and the early part of the monsoon of 1842, the men who had suffered from the fever in 1841, were liable to be attacked with a paroxysm of fever on the slightest exertion, exposure or excess, and although the disease was slight and did not prove fatal, yet it injured the constitutions of the men and gave a predisposition to dysentery and other organic diseases, and it will take some time, with residence in a good climate, before this liability to fever is entirely eradicated. The men who suffered from the Walcheren fever, laboured long afterwards under its effects, and even at the distance of twenty years, some who had suffered severely had occasional relapses of fever at certain seasons; among the Regiments who had been at Walcheren and who served afterwards in the Peninsula, many of the men were, upon the first exposure to cold and fa-

tigue, rendered unfit for duty so frequently as not to have one-third of the strength fit for service.

Concluding Remarks.

It is comparing small things with great, to contrast the epidemic fever which occurred among the 17th Regiment with the fever which proved so fatal to the British army in Walcheren in 1810, but I cannot refrain from doing so, because in India disease and death is so familiar, that nothing is thought of losing fifty or sixty men, while by a reference to a well known fact, the extent of the sickness in the 17th Regiment will be more justly appreciated.

In one of Deputy Inspector Marshall's papers on the statistics of the British Army, I find, that at Walcheren, taking the mortality among all ranks, 10 per cent died by disease and killed, while in the 17th during eight months, eight per cent died from fever and dysentery alone. One man died for every 19 cases of the Walcheren fever treated, while in the 17th one man died from every 23 cases of fever treated. On the 1st February 1810, among the corps which returned to England from the Scheld, 15 per cent were sick; while in the 17th during October between 30 and 40 per cent were sick.

Article. VII.

Annual Report of the 2nd Battalion, Bombay Artillery, stationed at Fort George, for the year 1841. By T. Robson, Esq.

Presented by the Medical Board, May 1842.

The aggregate of cases exhibited in the subjoined * abstract is formed of diseases of a general character, no epidemic nor indeed any peculiarly prevalent disease having appeared during the year.

The aggregate strength at Head Quarters for the whole year was 2892; of this number 722 cases were treated in hospital, which is just 24.96 per

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* Strength	113	
Included in the Return on the 31st December, 1841		113
Absent on command beyond the Division		232
Total		345

Number of Sick.

Remained 31st December 1840		35
Admitted in 1841		687
Discharged		671
Died in Hospital		21
Remaining 31st December, 1841		30
Average daily number of Sick for the year		36½
,, Number of Convalescents		0
Died without receiving Medical treatment		1
Changes since 31st December 1840.		
Recruits joined Artillery	408	
,, ,, Infantry	791	1199
Discharged from the service on account of Disease		
Discharged from the service on account of other causes		
Invalided		9
Pensioned		14

Prevailing Diseases, Dysentery, Fever, Rheumatism.

cent, or one in every four. Of 722 treated, 21 died, which gives 2.9 per cent, or one in rather more than 34.

By a comparison with the two preceding years, it will be seen that the total amount of sickness was rather less this year, and the proportionate degree of mortality greatly less than the former. The proportion of cases treated to the whole strength in 1839 and 1840, I am unable to exhibit, as I cannot readily obtain the numbers at Head Quarters for those years. But the annexed tabular form will exhibit the decreased rate of mortality during the past year, as compared with the two immediately preceding.

	No. treated	No. died.	per centage of deaths to No. treated.
1839	787	43	5.38 or 1 in 18
1840	840	58	5.95 or 1 in 17 nearly.
1841	722	21	2.9 or 1 in 34 2-5ths.

Of the above 21 deaths, eight took place in January and the early part of February, previous to my joining the Battalion, and of whom I know nothing, and two patients were transferred in a hopeless condition; one of whom died towards the end of February and the other early in March.

The remaining eleven fatal cases were as follows:—

In *April*, Dysentery	1	
——— Peritonitis	1	2
May, Apoplexy or coup de soleil		1
September, A recruit for the Infantry who had been ill the whole voyage out with softening of the brain	1	
——— Delirium Tremens	1	2
October, A worn out man from China, of Cachexia		1
November, Chronic disorganization of the Liver	1	
Cachexia and Dropsy in a man from Aden	1	
Remittent Fever	1	
Pericarditis	1	4
December, Remittent Fever		1
Total		11

Of the eleven it will be seen that four were chronic cases, affording little, if any encouragement from their first arrival, and the case of coup de soleil was of that intensity which proved rapidly fatal in a previously most healthy subject.

The disease which is numerically greatest, is fever. Of remittents and

intermittents combined 123 cases have been treated ; this number givies 17 per cent or $\frac{1}{6}$ of the whole.

Remittent Fever. — This disease claims the first notice. The cases have not been numerous but some few have been severe. The worst cases have been such as have presented at the commencement no very strongly marked symptoms, but on the contrary wherein these have been comparatively mild, though unyielding to treatment, and wherein the patients have usually considered themselves to be less seriously ill than the existing symptoms indicated; frequently complaining of languor and weakness rather than of decided illness, and saying that if they could get rid of their thirst and recover their appetite they should be well. In many of these cases the patients have resisted the impressions of disease for three or four days until unable longer to bear up against increasing loss of nervous energy, they have then for the first time presented themselves at hospital.

In such cases the complaint is usually made of general indisposition rather than of any very particular illness ; but the patient's appearance is unfavorable, the features are contracted, and the countenance has a character of depression ; the state of the tongue is various, it may be much loaded, or merely rough, while occasionally it is found quite clean and moist ; there will probably be no headache, but there is urgent thirst, and on taking the wrist it is with surprise the pulse is found to be accelerated to a rate far beyond that which the patient's statement has led one to anticipate. The action of the bowels, it may be, has continued to be regular, and the condition of the urine has commonly not been noticed.

On subjecting such a patient to the usual treatment for mild remittent, the feeling is that of disappointment at the unyielding character of a train of symptoms of no urgent severity, rather than of alarm for any one strongly developed symptom. The existence of headache may continue to be distinctly denied ; there may be no evidence of congestion in, or determination to, any one of the abdominal viscera ; but the fever continues, the remissions become more obscure, and now an inordinate degree of heat about the forehead or vertex may be detected by the hand, while as yet no complaint either of heat or pain in the head has been made by the patient, whose mind appears calm and composed, and intellectual powers remain up to the period undisturbed ; but shortly afterwards he becomes incoherent, muttering and talking to himself, but still answering with correctness when questions are put to him ; the pulse increases in rate and loses strength, indications of cerebral oppression rapidly advance, and the pa-

tient shortly dies. Such is the outline of a form of disease not unfrequently met with, and which the experience of Dr. Davis in Bombay, which was of some years continuance, led him to consider as the endemic of the place; but the fatal tendency of which, marked as it is by a specious mildness of character, may be commonly averted by an active adoption of such means as tend to restore equilibrium to the disturbed balance of the constitution.

But, as distinct from the foregoing, remittent fever has been frequently marked from the commencement by some prominent symptom by which the attention of the most superficial observer would of necessity be arrested. There has been occasionally severe headache, or headache which has been of long continuance prior to seeking advice; or great and distressing irritability of stomach with bilious vomiting; or again so much pain and tenderness in the right side as to leave it for a while a doubt whether the case should be primarily considered remittent fever or acute hepatitis. In these instances the plan of treatment is far more obvious than in those insidious cases to which I have referred above; and will, when vigorously carried out, usually lead the patient to an early favorable result. I was particularly desirous to have laid before the Medical Board the case of James Leonard, which occurred very shortly after I received charge of the medical duties of the Battalion, but unfortunately the case, which was copious and very interesting, cannot be found amongst the old diaries, although they are statedly made up according to their dates; but it appears that one of the evil practices into which the establishment had fallen previous to my joining the Battalion was that of the apprentice boys tearing up old diaries for their own use. Failing to obtain the case of the above named patient, in illustration of my remark, I have subjoined the case of John Flannagan, which is peculiarly interesting on this point; namely, that although during the whole period of his continuance in hospital he made no reference to his side, and careful examination over the liver could not detect any evidence of that organ being in a morbid condition, he returned to hospital a few days after his discharge, and just a fortnight from the period whence he may be considered to have been convalescent, with a well marked case of acute hepatitis, which ran a lengthened course of much severity and detained him in hospital for seven weeks from his re-admission.

Of Intermittents. It may be briefly remarked that the prevailing type has been quotidian, and in these cases quinine has manifested its wonted efficacy. I have usually found a scruple given early in the morning in five grain doses for four successive hours, sufficient to arrest the disease; if not the first day of its exhibition very commonly it would do so

on the second. Where the paroxysm has been expected early, so that four hours for the administration of remedy could not be calculated on, I have given three 8 grain doses in consecutive hours with the same success. I have commonly remarked that where the return of the paroxysm has been thus prevented, the patient has experienced copious perspiration continuing through the period during which the attack would probably have lasted, but in other respects has felt well and comfortable.

Hepatitis acuta. Of this disease 46 cases have been treated, giving 6-37 per cent or nearly 1 in 16. In every instance since I have been with the Battalion it has yielded to active antiphlogistic treatment, and no fatal case has occurred. The case of Joseph Jones which was severe and possessed great interest, is appended. At one period the indications of suppuration having taken place, were so strong, that I was impressed with a conviction that such was the fact, but the opinion was erroneous and the patient, though rather long ill, completely recovered.

Dysentery. Of this disease 61 cases are recorded. This is 8.48 per cent, or about 1-12th of the admissions. From the reports of my predecessors I was led to expect that at the commencement of the cold weather towards the end of the year, dysentery would become prevalent. Surgeon Gray particularly reports upon a very severe form of this disease which prevailed most extensively during the months of October, November, and December, of the year 1839 in which he had charge. It has not, however, been so this year, but on the contrary since the accession of the cold weather the cases of this disease have been few and tractable. During the course of the year some very severe cases have been treated, one of which, (and wherein the patient had a second attack) is appended in illustration.

Rheumatism. Although not a fatal, this is nevertheless a very troublesome disease, of which 98 cases stand on record, making rather more than 12 per cent of the total of admissions or 1 in $7\frac{1}{3}$.

Delirium Tremens. Of this disease 24 cases have occurred, making 3-3 per cent of the whole or 1-30th of the diseases treated; of the above number one died before I joined the battalion, and one subsequently, making the fatal cases 1-12th of the whole.

But although the effects of intemperate drinking have not been shewn in a greater number of instances in that aggravated form in which they appear in this disease, in a minor degree they are seen in a large proportion of those who are admitted into hospital. Men in the prime of life, of robust frame, and not under the immediate effects of liquor, are found unable to hold the hand steady without the most marked tremors; there is a character of irritability in the pulse unconnected with any ailment the men

may have ; and the tongue is frequently loaded ; exhibiting in the toute ensemble of the man the pernicions effects of the constant stimulation of the system by ardent spirits ; and by which the greater number of diseases are more or less influenced, and always to the disadvantage of the patient. Were it not for the abuse of intoxicating drinks my experience with the artillery in Fort George (limited I allow it to be) leads me to believe they would be as healthy a body of men as any Europeans in the Presidency. In this point of view, therefore, as well as from moral considerations, I cannot but deem the canteen system, which sanctions a man's gulping down twelve ounces of undiluted ardent spirit every day, (a quantity far greater than I have ever seen necessary to be given in the severest form of disease, and which common sense assures us can have none other than a most mischievous effect upon the human constitution) an injudicious system, but little, if at all, calculated to accomplish the end for which it was arranged and is still supported.

In conclusion I would beg leave to draw the attention of the Medical Board to a subject which I believe has on former occasions been laid before them, namely, the seeming inconsistency of denying to the hospital of the 2nd Battalion at the Presidency, which is, in point of fact, a depot hospital, for the accommodation of all * the sick of the Company's European troops, an establishment equal to that which is allotted to the 1st Battalion at an out station, not subject to the contingencies of recruits, unfits, &c. which frequently constitute the majority in the hospital of the 2nd Battalion ; and I would therefore respectfully urge the Medical Board to again bring this subject to the favourable consideration of the Government in the hope of obtaining that which is so much required, namely, a first class establishment for the hospital of the 2nd Battalion.

* The few men of the Staff who go to the European General Hospital, form a trifling exception.

Article VIII.

A Letter addressed to the Superintending Surgeon of the Deccan Division, on the use of the Iodide of iron. By D. Grierson, Esq.

Presented by the Medical Board, May, 1842.

Iodine has been known as a medical agent for about 30 years, yet its introduction into practice has been greatly slower and its use much more limited than its unequalled excellence demanded. Nor has the readiness been evinced to adopt its new forms, which might have been expected. Thus Iodine identified by Dr. Coindet, soon after its discovery by M. Courtois, with a medicinal agent he had previously resorted to with success, was used by him and by others following his example and recommendation eight years on the continent, before it was introducted into Britain by Sir A. Halliday. Ten years more had not sufficed to establish it in general favour when the authenticated facts and observations of M. Lugol sanctioned by the approval of the Academie des Sciences, proved the medicine to be possessed of such power over a class of peculiarly obstinate diseases as no other could lay claim to. Again it may be observed that the forms of the medicine relied on by Lugol are very simple, the metallic preparations being sparingly recommended and chiefly for one class of diseases.

In perfect accordance with the practice elsewhere, has been that in the Honorable Company's service,—only one combination of Iodine, the Hydriodate of Potassa is now at the disposal of executive medical Officers,—and it is with a view to remedy this deficiency, I wish to offer some remarks on another combination,—the Iodide of Iron.

This medicine was made known to the profession in 1834 by Dr. A. Thomson; it has now a place in the London Pharmacopœia; its mode of preparation is stated both in Dr. Thomson's work and in the Pharmacopœia, so that no reference to it is needed. Its medicinal properties are fully stated by Dr. Thomson and accord with my own observation, I shall therefore merely confine myself to a few facts touching my own experience of the remedy.

My first knowledge of the Iodide of Iron was in 1838, when it was prescribed for myself by Professor Carswell. Though the Hydriodate had previously failed, the most immediate beneficial effect followed. I have since used and continue to use the medicine occasionally, and as I believe that I should not have continued able for the performance of my duty without its use, I naturally prize it very highly.

2. A man who was in the Poor's Asylum in Malligaum when I received charge, who had long been an incumbent on the charity, and had undergone treatment for scrophulous swellings of the glands of the neck, and pains, swelling, and stiffness of the joints of the elbows and hands, was treated with the medicine, gradually improved in health from that date, and is now following his occupation of carpenter and gaining his subsistence in the bazar.

3. A young sepoy, of the 15th Regiment N. I. long bed ridden from syphilitic rheumatism and cachexia, and treated with so little benefit that he was put on the invalid list, was, when the Regiment left, transferred to my care while waiting for his discharge. He was put under the use of the Iodide of Iron, improved in health, and becoming impatient, was permitted to proceed to Bombay in the hope that he would again come on the strength of the Regiment.

4. A young sepoy of the 22nd who had fallen into much the same state as the former, and whom I had at one time thought it would be necessary to recommend for discharge, by means of the same medicine, recovered and is now doing duty in the ranks.

5. A young boy of weakly habit had necrosis of the fibula. In due time the dead portion of bone was removed, still no healing followed. After much delay and the use of other medicines without good effect, he began to take the Iodide of Iron and quickly recovered.

6. A sepoy of strong make and healthy appearance being on leave, was attacked with necrosis of the lower jaw. When first seen there was much swelling, fetid discharge and uneasiness. Without any attempt at removing the necrosed portion of bone, he began the use of the Iodide of Iron. Shortly the necrosed bone quite detached was lifted out by the forceps, and the complete recovery was effected much more quickly than I had even hoped.

I have used the medicine in many other cases, but these are the most remarkable; and if they be considered few, I hope it may be borne in mind that the limited field of a native Regiment may have contributed to the result.

It may be difficult to convince any one that the same good result would not have followed the use of the Hydriodate in the cases above mentioned, and imposible to prove it; I decidedly believe they would not, at all, in some of them, and in none of them so quickly. But the medicine has in other respects the superiority over the Hydriodate; it is strongly stimulant and roborant, exciting all the secretions especially those of the mucous membranes; hence it improves the appetite and quickens the alvine discharge, thus beneficially influenciug the whole system. In doses in which it produces its full effect it is followed by no unpleasant symptom. On the other hand the Hydriodate does not produce on the system the beneficial effects of the other, and if pushed to a full dose is apt to disturb the head and cause an unpleasant profuse lachrymation. Besides, the Hydriodate is easily adulterated and has been adulterated in the proportion of 70 to 30; the other combination cannot be adulterated.

Besides cases analogous to those mentioned, there are various other diseases peculiar to the East and of great intractability, in which the Iodide of Iron might, I apprehend, prove of use. Those who have been for some time in the East must be familiar with the names, if no more, of the Bussorah date mark and the Broach or Guzerat boil; latterly too we have become acquainted with Scinde sores, and the neat and graphic memoir of *M. Chedufay has introduced to us the scourge of Yemen, (Plaie de Yemen,) more commonly known as the Aden ulcer. It may probably be known also to many that the bulk of invalids annually transferred to India from the straits of Malacca, consists of those labouring under bad ulcers. In all these instances we have local debility and diseased action of a peculiar kind, resisting ordinary treatment and in most there is also cachexia or general debility. Such are just the cases to which the remedy in question is adapted, and should it, as anticipated, be found adequate to their cure, it will magnify the triumphs of the healing art, extend the benefits medicine has conferred on afflicted humanity, and impart joy to every benevolent mind.

It will be understood that the object of these observations is to induce the Medical Board to take steps to put at the disposal of Executive Medical Officers the Iodide of Iron, and I conclude with respectfully begging to recommend this to be done.†

* Transactions of Medical and Physical Society, No iv.

† *Note by the Secretary* — This preparation, it is believed, is now procurable from the Medical Stores.

Article IX.

A letter on the Fever which prevailed at Bankote in the S. Concan in 1841, *addressed to the Superintending Surgeon of the Presidency Division.* By T. Waller, Esq.

Presented by the Medical Board January, 1842.

I have the honour to inform you that in compliance with the instructions contained in your official communication of the 6th ultimo, I have seen some of the cases of fever prevailing at Bankote, and now beg to lay before you the following remarks as to its nature and probable cause.

It may be briefly described as an obstinate intermittent, commencing with rigor which lasts for variable periods of from one to twelve hours, generally ending in diaphoresis; the Tertian, and Quartan types mostly prevail; the duration of the fever is uncertain, some patients recovering in a few days, others on the contrary lingering on for months, and in most of the latter, visceral complications are observed, chiefly considerable enlargements of the spleen.

I visited several persons both adults and children, all suffering from the prevailing endemic, they were able to move about, but looked sallow, and thin, with white furred tongues, quick, weak pulses; dry, but not hot skins; and most of them with affections of the spleen, and tumid bellies; five-sixths of the cases are of this nature.

Remittents occur, resembling those generally met with in other parts of the Konkun; in these there is little or no secretion from the skin; and in many cases delirium. They are the most fatal cases, but fortunately the proportion is small when compared with the number of simple intermittents.

I do not believe the fever is contagious, and confess myself unable to point out any cause as certain whereby to account for the continued prevalence of the disease, seeing that hundreds of places very similarly situated, are, comparatively speaking, nearly exempt from fever; at all events, of an endemic character.

It is only within the last three or four years that the disease has been so prevalent, and it is extremely difficult to point out any local cause which

has not been in operation for a much longer period, this it is most important to bear in mind ; the only two exceptions, that occur to my mind, are, the probable increase of population, and the decided growth of large trees in the midst of the town; the latter must, I think, be prejudicial, not only by preventing a free circulation of air, but by the constant fall of decaying leaves, decomposing during, and after, the monsoon ; but then it is right to add, that nearly every Konkun town, is similarly situated ; the increase of population I have no means of accurately ascertaining, but the records of the Collector's office, would no doubt furnish correct data.

Some land formerly under cultivation, by the breaking down of embankments, is now exposed to the action of salt water, but the surface thus acted on, is too small to generate such quantities of noxious miasmata, as would be capable of producing fever.

The gradual enlargement of a very extensive sand bank at the mouth of the river, has been supposed by some, to act prejudicially by retarding the exit of fresh vegetable matter brought down by the Savitree river ; but after actual inspection, I do not imagine it has any baneful influence ; or if any, but in the slightest degree, for the waters are, comparatively speaking, free from any visible admixture, and the bank itself is composed of pure sand, nor is there any noxious effluvia perceptible.

A few miles inland from the opposite bank of the river, the Hubshee's territory is met with, clothed with dense jungle, and presenting a great contrast to that on the Bankote side, which is completely stripped of vegetation ; now the land winds blowing over the former, have, I think, a prejudicial influence, as they lower the temperature very considerably during the night, and towards morning, while the bare naked hills around Bankote becoming highly heated during the day time, tend considerably to increase it, these extremes cannot but be injurious to health, and I think this to be *one* of the most likely causes of the prevailing sickness ; it must, however, be borne in mind, that for four months, when the south-west monsoon prevails (and there are no land winds) that still the same form of fever is met with.

The inhabitants as far as I have examined them, state, that there is no change observable, in the quality of their water, nor in fact are they able to assign any cause for the sickness, but call it simply a visitation of the Almighty ; all classes, whether Mussulmans or Hindoos, suffer alike, both rich and poor.

With the exception of the close proximity of the jungly district to the northward, it must be borne in mind, that all the causes above enumerated, are in operation in almost every Konkun village. The guard of Rutna-

giree Rangers over the treasure, are constantly suffering from fever, here the cause seems more obvious; they are stationed in a small fort completely overgrown with jungly grass and weeds, and an order should be immediately given that these may be burnt or removed.

The village of Vehlass in which fever of an intermittent type at present principally prevails, is embosomed in a dense grove of palms, plaintain, and other fruit trees: the soil is nearly two-thirds pure sand, with one-third of decomposing black vegetable mould. The natives can point out no cause for the fever which has not existed for the last twenty years, but I am of opinion, that a want of due circulation of air, and the accumulation of decomposing vegetable matter, must aid at least, in producing disease.

I beg in conclusion to state that the inhabitants of Bankote, have exerted themselves to a certain extent, and cleared away a great deal of refuse matters from their streets, and a gentleman now on the spot states that the town is, if any thing, cleaner than it was ten years ago.

I am informed that the mortality has considerably diminished, in Bankote, Vashevee, and Vehlass; and the principal form of fever now observed is a tertian intermittent; several of the villages in the Hubshee's district near Bankote suffer also from fever, and of the same form; and this would lead us to infer that the cause is somewhat extended. I have above alluded to the increase of population as a cause of sickness, I think it may act prejudicially by causing a greater crowding of the houses, &c.

I regret that I have not been able to point out with confidence, any *certain* cause of the prevailing endemic, but hope that some little information may be conveyed by the above observations (made on the spot,) which I now do myself the honor to forward, for your information.

Bankote, 12th *December*, 1841.

Article X.

Remarks on the practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases. By John Peet, Esq.

Presented December, 1842.

It has long been an acknowledged truth that remedies are often eulogized, not so much from a reference to their actual worth, as to the reputation which they acquire, by their apparent success in a few cases ably reported. In like manner a particular mode of treatment sometimes meets with the censure of the profession, and prematurely falls into disrepute, without the causes of its failure being fully understood, or the circumstances influencing its application, sufficiently taken into consideration.

Amongst the remedies, which have thus lost credit, there is none more prominent, than the operation of transfusion, and it is chiefly with the view of endeavouring to ascertain, by an investigation of the recorded cases, whether the now avowed neglect of the practice, is owing to its being really useless, that this short paper is composed.

Nearly two centuries have elapsed since the proposal of re-organizing the system by the adoption of transfusion, was received with the greatest applause. The discovery of the circulation of the blood, had at that time given rise to the most extravagant expectations, and the utility of the remedy was viewed with unexampled credulity. Diseases totally differing in their nature, were hastily submitted to its use; it will consequently, be hardly a matter of surprise that in a very short period, it was entirely discarded. Accordingly we find, from the middle of the 17th, to the beginning of the 19th centuries, with the exception of a few experiments upon animals, instituted in the year 1785, by Dr. Harwood, Professor of Anatomy at Cambridge, no notice is taken of transfusion.

In the early part of the present century, the practice came again under investigation, and about the year 1825, Dr. Blundell clearly demonstrated

that blood might be passed by means of syringe from one animal to another of the same species, without danger or inconvenience to the animal receiving it, or without the blood being seriously injured by its transit through the syringe.

Trials upon the human subject soon followed, and it appears the first successful case of its performance in England, occurred in September 1825.*

There is a marked difference in the practice as then introduced, compared with the mode in which the operation was performed at an earlier period. In all the preceding trials, an artery of an animal, was connected with a vein of the patient, and calves and sheep were usually selected to supply the blood. † Modern Physiological inquries have shown, that, unless the blood be taken from an animal of the same species as the one into which it is to be injected, little, if any, benefit can be expected. Consequently, since this point was clearly proved by a series of experiments, a syringe has been always employed, amd human blood transfused whenever the operation has been tried as a remedial agent.

From the year 1825 up to the present time, I have been able to find recorded, twenty-two successful, and thirteen unsuccessful cases.

Of the successful cases: there was one of Hæmorrhage following the operation for strabismus; one of Hæmorrhage during the amputation of the thigh, and one of Hæmorrhage from the bursting of the vena saphena. There were two cases of collapse arising from excessive Menorrhagia. Six cases of hæmorrhage before, and eleven of Hæmorrhage after delivery.

The unsuccessful cases are of a more diversified nature; they are shown in the following table.

Table No. I.

	Number.	Nature of Cases.
	1	Hæmorrhage following compound fracture of leg.
	1	Hæmorrhage following amputation of thigh, the external iliac having been tied before transfusion was adopted.
	1	Hæmorrhage from the bursting of an artery.
	1	Collapse produced by large bleedings during an attack of Puerperal fever.
	1	Incipient Hydrophobia.
	1	A child in a state of asphyxia removed from the mother by the Cæsarean section.
	1	Hæmorrhage following amputation at shoulder joint.
	1	Hæmorrhage after expulsion of Placenta.
	1	Hæmorrhage during the birth of Placenta.
	1	Hæmorrhage during the birth of Placenta.
	2	Hæmorrhage both before and after the birth of Placenta.
	1	Hæmorrhage from Placental presentation.
Total	13	

* Lancet, 17th September, 1825.

† Cyclopedia of Medicine, article Transfusion by Dr. Kay.

From this table it will be seen that there were only seven cases of Hæmorrhage alone, the remaining six having various complications.

* In the 1st case, viz. of Hæmorrhage following compound fracture of the leg, the stump was found after death in a state of gangrene. Transfusion was twice adopted, and was at first productive of considerable re-action.

† The 2nd case occurred in a child eight years of age. Amputation was performed for extensive Necrosis of the Femur. Secondary Hæmorrhage took place on the eighth day. It was at first stopped by compression, but it subsequently returned, when the external iliac was tied. He rallied for about an hour after the transfusion, and then rapidly sunk.

‡ In the 3rd case, the patient had ceased to respire, three or four minutes before the operation was performed.

§ The 4th case was one, in which the woman was evidently sinking. No decisive effect was produced.

|| In the 5th case, the patient had been bitten four weeks previously. There was some diminution in the dread of fluids after the injection, but the relief was very transient.

¶ In the 6th case, about two ounces of venous blood were injected into the umbilical vein. Some movements in the face followed.

** In the 7th case, the subclavian artery had been twice tied, without stopping the bleeding. Sixteen ounces of blood were transfused. It is remarked that the blood had scarcely reached the heart, when the patient was seized with a fit of suffocation, and immediately died.

†† In the 8th case, the woman had ceased to respire five minutes before the performance of the operation.

‡‡ In the 9th case, the patient was evidently sinking, but more than four ounces could not be obtained from the lady, who offered to supply the blood.

* Mr. Green, Lancet, October 12th, 1829.

† Medical Gazette, April 24th, 1840. Report of cases in the Edinburgh Royal Infirmary.

‡ Blundell's Physiological Researches.

§ Blundell's Physiological Researches.

|| Dr. Blundell, Lancet, November 22nd, 1828.

¶ Lancet, November 22nd, 1828. Dr. Dieffenbach.

** Lancet, December 4th, 1830. M. Roux.

†† Blundell's Physiological Researches.

‡‡ Blundell's Physiological Researches.

* The 10th case, appeared to fail, owing to the small size of the syringe which had to be refilled sixteen times. The injection was made into the external jugular vein, and after death a small quantity of air was found in the right side of the heart.

In all these cases there were either complications, or the want of success may be attributed to the mode of performing the operation. In the remaining three however, the causes of failure are not so obvious; they will be discussed in another place.

The following table will shew the length of time, which elapsed, between the cessation of the bleeding, and the commencement of the operation, in thirteen successful, and five unsuccessful cases.

Table No. II.

	Successful cases.		Unsuccessful cases.	
	Number of cases.	hours.	Number of cases.	hours.
	1	½	1	3
	2	1½	1	5
	2	2	1	6
	2	3	1	10
	2	4	1	72
	1	4½		
	1	6	5	Total.
	2	11		
Total.	13			

In tables No. III and IV the state of the different functions is mentioned, in all those instances where this information could be correctly obtained.

Table No. III.

Successful cases.

Number of Case	Circulation.	Number of case.	Respiration.	Number of case.	Nervous system.
1	Pulse 120 and at times imperceptible.	2	Hurried and attended with sighing.	1	Great restlessness with frequent syncope.
1	Pulse had been imperceptible at wrist and carotids for 2½ hours.	1	Short and hurried.	1	Complete syncope, urine and fæces, passed involuntarily.
1	Scarcely perceptible, 140 thready and small.	1	Thoracic and slightly sterterous.	1	Impossibility of deglutition or articulation.
1	Fluttering and occasionally not to be felt.	1	Rapid and embarrassed; breath cold.	3	Great restlessness.
2	Pulse at wrist and carotids not to be felt.		Difficult with a sound of air passing through mucus.	3	Perfect insensibility.
2	Pulse at times imperceptible.			1	Jactitation.
4	Pulse not perceptible.			2	Vomiting.
6	Barely perceptible.				

* London Medical and Physical Journal, August 1826.

Table No. IV.

Unsuccessful cases.

Number of case.	Circulation.	Number of case.	Respiration.	Number of case.	Nervous system.
2	Pulse scarcely perceptible.	1	Breathing quick and short.	1	Faintness and at times insensibility.
1	Pulse slow, and intermitting, with two quick pulsations, full and sharp.	1	Greatly hurried.	1	Great restlessness and jactitation.
		1	Difficult.	1	Delirium.
				1	Extreme restlessness; loss of the power of swallowing.
1	Pulse weak and fluttering; often imperceptible.			1	Restlessness.
1	Pulse perceptible only at intervals.			1	Extreme collapse and jactitation.
1	Pulse imperceptible at wrist.			1	Talked incoherently; slight convulsive twitches.

1	The woman had ceased to respire five minutes before the operation was performed.
1	The woman, had ceased to respire three or four minutes.
1	Evidently sinking
1	This woman was in that state which as "men of observation know, is the certain precursor of death."
1	Extreme collapse; symptoms of pleuritis.

The quantity of blood transfused, of course varied in the different cases. It is shown in the following table.

Table No. V.

Successful cases.		Unsuccessful cases.			Successful cases.		Unsuccessful cases.	
Number of cases.	Quantity.	Number of cases.	Quantity.		Number of cases.	Quantity.	Number of cases.	Quantity.
	oz.		oz.			oz.		oz.
2	2	1	2		2	8	1	18
2	4	1	4		1	9	1	29
1	5	3	6		1	10 or 11	—	
1	5½				2	12	13	Total.
2	6	1	8 or 10		2	14		
2	6½	1	10		1	22		
1	6 or 7	1	14		1	24½		
1	7 or 8	3	16		—			
				Total.	22			

Thus it will be seen, that the largest quantity of blood transfused in 22 successful cases, was 24½ oz. the smallest 2 oz. The average in this number of cases appears to be a little more than 8 oz.

In the unsuccessful cases, the largest quantity injected, was 29 oz., the smallest 2 oz. The average about 12 oz.

The quantity necessary to affect the system will be seen in table No. VI., consisting of 15 cases.

Table No. VI.

	Number of cases.	Quantity.
		oz.
	4	2
	1	3½
	4	4
	3	6
	2	8
	1	12
Total	15	

The immediate effect of transfusion upon the different functions is a point of considerable interest. We should á priori expect the circulating and nervous systems, to be much influenced, which experience confirms.

The first sensible alteration is generally in the pulse. From being weak, quick, and in some cases imperceptible, it becomes slower and more distinct.

* There is one curious case recorded by Dr. Ingleby, where the pulse was not perceptible in the arm into which the injection had been made, for several hours after the operation.

† Occasionally a slight intermission is observed; this appears to have occurred in one case, when only four ounces of blood had been transfused.

In experiments upon animals, I have found, that the action of the heart is sometimes much increased, and attended with more or less irregularity. By proceeding with the injection more gradually, this unfavorable symptom has generally subsided.

The diminution in the frequency of the pulse is often very marked; in some instances rapidly falling from 130 or 40, to little more than 100 beats in the minute.

The respiration is very quickly affected; the breath becomes warm, and the breathing slower and less laborious.

The effect of transfusion upon the nervous system, is equally well developed.

In several instances sensibility and speech, which had been previously quite lost, were almost immediately restored, and the patients who had been but a short time before, in a state of perfect unconsciousness, sat up and

* Practical Treatise on Uterine Hæmorrhage.

† Lancet, Sept. 17, 1825.

spoke. Occasionally a degree of restlessness is produced. This occurred in the case (before alluded to) in which the pulse intermitted.

* In one case after four ounces had been injected, there was an approach to syncope, the pulse fell, and there was sighing, with efforts to vomit. These symptoms ceased after the expiration of a few minutes.

Vomiting occurred in one case during the operation, but this may have been rather one of the symptoms resulting from the Hæmorrhage, than the effect of the transfusion.

The phenomena now mentioned, are those which have been found to attend the operation in some of the cases, where it has been successfully performed.

From the number of unsuccessful cases, there are two instances in which it was thought to have hastened death, one has been already alluded to as recorded by M. Roux, the other will be presently discussed.

In M. Roux's case, it appears the blood had scarcely reached the heart when the patient died by suffocation.

† In one other instance, slight sickness occurred, and towards the end of the operation, there was an irresistible desire to change posture.

The post mortem appearances where the operation has been unsuccessfully tried, have not been often described.

‡ In one case a small quantity of air was found in the right side of the heart.

§ Dr. Collins observed, that the right auricle was distended with fluid blood, the other cavities of that organ were empty; the injected blood appearing to have passed no farther than the right side.

Having given an outline of the cases which are recorded, the question now presents itself as to whether they are sufficient in number to prove the utility of the practice.

It will be remembered that there are twenty-two successful cases, brought under notice; it is not improbable, there may be some few others, which have escaped my observation. The unsuccessful on the other hand, only amount to thirteen, and it has been already mentioned, that there are only three in which the failure is not owing, either to the peculiar nature of the case, or to the mode of performing the operation. Provided these are all the instances where transfusion has been adopted without success, the proportion is

* Mr. Jewell, London Medical Journal, October, 1825.

† London Medical and Physical Journal, August, 1836.

‡ Mr. Jewell, London Medical Journal, October, 1825.

§ Practical Treatise on Midwifery.

decidedly in favor of the practice, but I am not unaware, that the custom which unfortunately prevails of withholding unsuccessful cases, whilst those of a different kind are eagerly brought forward, will render any argument founded upon the relative proportion of those reported, of little importance.

A better and more correct inference may perhaps be deduced, from a consideration of the symptoms, and the state into which the patient is reduced before the operation, assisted by the evidence which is afforded, by the effect of transfusion in producing reaction. In order to make this point as clear as possible, I will give a short account of some of the more severe cases, in which the practice was successfully adopted.

Case No. I.—Reported by Mr. Brown in the London Medical Journal, for February 1827. A woman aged 30, attacked with Hæmorrhage before the expulsion of the placenta continuing for a few minutes. The injection was made about two hours after the cessation of the bleeding; the usual stimulants, viz. brandy, camphor, æther, &c. having been previously given. The pulse was neither to be felt at the wrist, nor in the carotids. The respiration was hurried, thoracic, and slightly sterterous, and the countenance was deathlike, with coldness of the surface. The eyes were closed and the pupils fully dilated. There was perfect insensibility. Six ounces and a half of venous blood were transfused: after 13drms. there was no change. Five minutes were allowed to elapse when 15drms. were injected. The pulse could then be felt at the wrist, and the respiration became more free; after five ounces had been introduced, the pulse was 120 and regular; there was slight sensibility upon touching the cornea, and the pupils acted upon exposure to light. At the termination of the operation the pulse was 120 and equable, and there was some restlessness.

In one hour and ten minutes, from the commencement of the transfusion, she noticed all around her and spoke with a firm and distinct voice. She subsequently suffered a good deal from febrile disturbance, but the reaction was permanent. The blood was transfused at four different times, and five or ten minutes allowed to elapse between each injection. Between the 3rd and 4th injection half an ounce of brandy was given.

Case No. II.—Reported by Mr. Furner in the Medical Gazette, for July 4th, 1835. A woman aged 37, whose thigh was amputated for medullary sarcoma of the knee. There was considerable Hæmorrhage during the operation, producing a state of alarming collapse. The usual remedies were given without effect, and the operation performed almost immediately. The pulse was imperceptible both at the wrists, and in the carotids,

and there were other symptoms of extreme collapse. Five ounces of blood were transfused. In the space of a minute or two pulsation gradually returned, and the skin became warm and less clammy. Further stimulants were not required. No unfavourable symptoms occurred, and the stump healed in five weeks.

Case No. III.—Recorded by Dr. Oliver, in the Edinburgh Medical and Surgical Journal for October 1842. A woman aged 42, attacked by Hæmorrhage after delivery, continuing for some time without any effectual means being used for its suppression. Transfusion was adopted about eleven hours after the cessation of the bleeding, the usual stimulants having been administered in the interval. The pulse had neither been perceptible at the wrist, nor in the carotids for two hours and a half. There was perfect coma, and the surface was blanched. About twenty-two ounces of blood were transfused. Until twelve ounces had been introduced there was no change; the pulse then became perceptible. After twenty-two ounces the restoration was complete, there was a return of consciousness, as well as of speech. No unfavorable symptoms following the operation are mentioned, and it does not appear that any further stimulants were necessary.

The collapse in these three cases was exceedingly great, and in the third case it is interesting to observe, that no amendment took place, until a large quantity of blood (twelve ounces) had been injected. It is said, this patient had none of the more prominent, and distressing symptoms, which so frequently follow large bleedings.

By referring to table No. III. it will be seen, that from amongst the remaining nineteen cases, there were several in which the pulse had entirely left the wrist, whilst in others it was only occasionally imperceptible, and in some it was distinct.

It is generally considered as one of the strongest arguments, adduced by those who deny the efficacy of this practice, that it is impossible to distinguish the cases of collapse which are recoverable by the ordinary remedies, from those which would be necessarily fatal; and it has been not unfrequently said, those instances in which the operation is reported to have succeeded, would have been restored by nature, or the means usually employed for producing reaction. That in some of the recorded cases there is a foundation for this assertion, appears probable, as for instance, when the pulse was tolerably distinct, but that it is generally applicable to the operation of transfusion, is, I think, incorrect; and in the three cases an account of which has just been given, it would betray a degree of scepticism to deny that transfusion had saved life.

If it be asserted, there are no phenomena resulting from excessive Hæmorrhage, which denote a fatal termination, it will be impossible to come to any satisfactory conclusion upon the subject of transfusion, as it may be said of every case, in which the practice appears to succeed, that it would have recovered without it. If on the other hand, it be admitted, that a class of symptoms may be induced, constituting a case of such danger, that restoration cannot be effected by the measures generally adopted, it appears to me, the three which have just been mentioned, are unquestionably of this kind.

The conclusion I would venture to draw from a consideration of these cases, is, that transfusion has succeeded in producing reaction, when death would have been the inevitable result, had the usual stimulants been alone given.

Proceeding in the inquiry, I will now advert to the three cases before alluded to, in which the operation failed.

Case No. I. Recorded by Dr. Collins in his Practical Treatise on Midwifery. Hæmorrhage occurring after delivery before the expulsion of the placenta. It was calculated only two pints of blood were lost. The usual stimulants were administered, and heat applied for ten hours after the cessation of the bleeding. The pulse was weak and fluttering, often imperceptible, with difficult respiration. There was extreme restlessness, and loss of the power of swallowing. Ten ounces of blood were transfused. The patient died a few minutes after the performance of the operation. Dr. Collins remarks, that the injection did not appear to have any more marked effect, than that of occasioning indistinct muttering.

Case No. II. Also recorded by Dr. Collins in his Practical Treatise on Midwifery. Hæmorrhage, both before and after the removal of the placenta, occurring in a woman thirty years of age; stimulants were used, heat applied, and the operation performed three hours after the bleeding had stopped. The pulse was perceptible only at intervals; there was restlessness, and the extremities were cold. From eight to ten ounces of blood were injected. No effect was produced, and death occurred a few minutes after the operation.

Case No. III. Reported by Dr. Ashwell in Guy's Hospital Reports Vol. IV. 1837. Hæmorrhage from placental presentation occurring three times before delivery, the child being removed by turning. There were the usual symptoms of extreme collapse. The injection was made twenty-four hours after delivery, but three days subsequent to the last gush of blood;

Note.—It was thought, death was rather accelerated by the transfusion.

seven ounces were at that time transfused. The amendment was very marked. The pulse became full and distinct, she spoke rationally, and the eyes regained their natural expression. In less than an hour, however, the collapse returned, when seven ounces more blood were injected. Reaction was produced, but not to the same extent as before. She rapidly sunk, and died very shortly after the second transfusion.

In these three cases, the operation seems to have failed, without the cause being very obvious.

The first of Dr. Collins' cases, is singular, inasmuch as the patient had only lost two pints of blood ; an amount not larger than sometimes attends what are considered natural labors. In Dr. Ashwell's case, the failure appears marked, but it must be borne in mind, that the first injection was not made, until seventy-two hours after the Hæmorrhage had ceased. A length of time sufficient to allow of a serious change being induced in a vital organ.

It would be extremely difficult to offer any satisfactory explanation of the want of success, attending the adoption of the practice in these three instances. I may, however, remark, that Dr. Collins' cases differ from many of those reported, in the rapidity with which death appears to have followed the injection. Dr. Collins has not decidedly asserted, that death was hastened by the operation; and yet, as the patients died a few minutes after it was performed, it must be, I think clear, either that the injection had a positively injurious action upon the system, or that the collapse had proceeded to an almost unusual extent. In the latter case it would not be an unfair inference to suppose, the failure may be possibly owing to this cause.

In support of the supposition, that the introduction of the blood, had acted deleteriously, there is the case recorded by M. Roux ; but this is the only instance I have been able to find where such an effect is attributed to it. In the greater number of cases, where the respiration had not entirely ceased, more or less reaction followed the injection ; and even in the few instances in which no favorable symptoms succeeded, it does not appear that any injurious effects were supposed to attend the adoption of the practice.

Mr. Roux's case was one of an exceedingly complicated nature, and may therefore be left out of the discussion ; and as this is the only one which supports the view that the transfusion acted injuriously, it would be more reasonable to conclude, that in those recorded by Dr. Collins, the great extent to which the collapse had proceeded before the operation, may be in some measure the cause of its failure.

Whilst transfusion is viewed as a desperate measure, only to be used as a last resource, the unfavorable cases must frequently have this argument in their favor.

General remarks. Having endeavoured to arrange all the evidence, which is afforded by the recorded cases, both in favor of, and against the utility of transfusion, I may now perhaps be permitted to make a few general remarks upon the subject.

1st. As to the nature of the cases in which transfusion is justifiable. Various states of the system unconnected with the effects of Hæmorrhage, viz. Hydrophobia, Asphyxia, Cholera, &c., have been submitted to this mode of treatment, but not with such success as to entitle them to consideration.

The collapse most frequently requiring transfusion, will be of course that, which is occasioned by Hæmorrhage during parturition; but it will be seen by referring to table No. III. there are two successful instances of its performance, in cases of bleeding from other causes.

The most favorable cases will be those, where there is a sudden eruption of blood from the uterus, followed by a state of extreme collapse.. It is often remarked that although the Hæmorrhage may cease, the collapse will increase, notwithstanding the assiduous use of the most powerful stimulants.

It has occurred to me to be present at two cases of uterine Hæmorrhage which had a fatal termination ; in one death took place in four, in the other in ten hours, after the bleeding had stopped.

2. With respect to the length of time the collapse may continue, without transfusion losing its power of restoring the patient.

Dr. Blundell states that he succeeded in restoring an animal five minutes after apparent death from bleeding, but if a longer period were allowed to elapse, in no case could the animal be resuscitated.

I have repeated Dr. Blundell's experiments upon this point, but without being able to arrive at the same result. I never could succeed in recovering an animal after the function of respiration had been entirely suspended, although I varied the experiments, by injecting fluid into the arterial as well as venous systems.

I will not presume to place my negative experiments in opposition to the positive ones of Dr. Blundell ; but I may perhaps be allowed to mention, that there does not appear to be any instance of reaction in the human subject, following the performance of the operation, when the patients had been in a state of apparent death, although there are three, in which it was tried.

3rd. With regard to the nature of the injected fluid.

Owing to the occasional difficulty of procuring a supply of blood at the moment it is required, as well as to the obstacle, which its rapid coagulation offers to the successful adoption of the practice, it has been considered a desideratum, to find some fluid which might be substituted. Accordingly experiments have been made with water, saline solutions, and the blood of animals; but it has been clearly shewn, that although reaction to a certain extent is produced by them, the effect is very transient.

* Within the last few years, some very interesting facts upon this part of the subject, have been made out, by Prevost and Dumas, Dieffenbach, and more recently by Dr. Bischoff. They all agree, that blood deprived of its fibrine does not lose its vivifying power, and according to Dr. Bischoff, when thus modified, it may be injected from mammalia into birds, without ill effects, whereas if blood from which this constituent is not removed, be used, the bird almost immediately dies with the most violent symptoms of poisoning. But it is a curious circumstance, that although the serum and red particles, may be transmitted from one animal, to another of a different species without bad consequences, yet they have not the power of causing reaction after dangerous bleedings, but if used upon an animal of the same species, blood thus modified will answer all the purposes of transfusion.

In order to make myself certain whether blood deprived of its fibrine may be substituted for that fluid in its natural state, I instituted the following experiment.

At 8 A. M. of the 27th May, 1841, assisted by my friend Mr. Sibson resident Surgeon to the Nottingham General Hospital, I laid bare the carotid of a middle sized full grown dog. Having introduced a tube, the blood flowed very freely until ten ounces had escaped. The animal appeared greatly distressed; the pulse in the leg became perfectly imperceptible, and the action of the heart exceedingly weak. The respiration was at first remarkably quick, but afterwards slow, deep, and sonorous, with coldness of the breath and surface; frequent convulsive attacks supervened, attended with the passage of the urine and fœces. The femoral artery of a second dog was opened at the same time as the carotid of the first, and the blood stirred for a few minutes, so as to remove the fibrine. Six ounces of the serum and red particles were slowly injected into the external jugular vein at three syringes full. After two ounces had been transfused, there was slight quivering of the muscles (a sort of shuddering) and the circulation and respiration appeared much disturbed. A few minutes were allowed to elapse,

* Muller's Physiology, translated by Dr. Baly.

when one ounce was injected ; the pulse in the leg could then be felt ; the respiration became less laborious, and the surface partly recovered its natural temperature. After six ounces had been injected, the animal sat up, and when spoken to, endeavoured to stand. At the end of an hour, there was no threatening of returning collapse. The dog was killed by injecting air into the veins.

To obviate the objection which might be raised, that the animal was not allowed to live a sufficient time to prove whether the reaction would be permanent, I repeated the experiment, keeping the dog alive for twenty-four hours, when he seemed to be only suffering from the shock of the operation.

It would therefore appear, that blood from which the fibrine is separated, answers equally as well in producing reaction, as before this constituent is removed. As the facility of performing the operation by this means is much increased, it would be probably better, in all cases, that the serum and red particles, should be alone injected.

4th A question has been raised, as to whether the blood should be introduced into the venous or arterial systems.

Dr. Blundell thought it would be perhaps better in apparent death, to inject it into the carotid in a retrograde direction, so as to fill the coronary arteries, as it has been thought upon their distension the irritability of the heart may in some measure depend.

The following experiments were made with this view.

Experiment 1st. On the 21st of January 1841, I opened the right carotid of a full grown mongrel dog. The blood flowed very freely for three minutes, then more slowly, and subsequently there was merely a slight oozing.

At forty-three minutes after the opening of the artery, respiration entirely ceased. I immediately introduced a tube into the carotid and injected water at a temperature of 102 F. in a retrograde direction. This was followed by a quivering of the muscles of the abdomen, and of those about the mouth, which soon ceased; in two or three minutes it returned, and became more general, for the space of a minute. It then entirely subsided.

Artificial respiration was now commenced. When about twelve ounces of water had been thrown in, the injection was discontinued. The artificial respiration was kept up for more than an hour, but without producing any additional signs of returning life.

Upon examining the animal a few hours after death, the right side of

the heart, was filled with coagula and water, the venæ cavæ were also distended; the left side of the heart and pulmonary artery were empty.

The fluid had evidently made the entire circuit of the vessels, as it was found in the right side of the heart, after being introduced into the carotid. It appears to have been there arrested.

Experiment II. On the 20th January 1840, a tube was introduced into the carotid of a large bull terrier; the blood as it flowed was received into a vessel, and stirred so as to remove the fibrine.

The usual symptoms of excessive Hæmorrhage were very quickly produced, and at ten minutes after the opening of the artery respiration ceased.

I slowly injected into the carotid artery in a retrograde direction, six ounces of the blood, deprived of its fibrine, which had been previously removed from the vessels, artificial respiration being at the same time performed. There was no appearance of returning life.

Experiment III. On the 12th June 1841, having introduced a tube into the right carotid of a small sized mongrel bull terrier, the animal was allowed to bleed until respiration had entirely ceased. A small quantity of a saline solution (1 oz.) consisting of the carbonate and muriate of soda, was carefully injected into the carotid artery in a retrograde direction. This was followed by the occurrence of several full and deep inspirations, together with irregular twitchings of the muscles about the mouth, which almost immediately ceased. About four ounces of blood deprived of its fibrine, were now slowly transfused into the external jugular vein, but without producing any appearance of returning life. The injection of the saline solution into the carotid was repeated. No respiratory movement followed. Artificial respiration was not performed in this experiment.

The conclusions to be drawn from these experiments are rather opposed to the view entertained by Dr. Blundell, but they are not sufficiently numerous to set the point at rest.

If it were proved, that blood introduced into the carotid, and transfused in a retrograde direction would answer any good purpose, there are cases where it might be tried, as for instance when this vessel is divided in cases of suicide or by violence. Here there would be no great difficulty, in introducing an instrument into the vessel, and injecting in this direction.

As to the advantage which this mode of proceedure, would have in cases where respiration had not ceased, over the usual practice of opening a vein, there are no facts to determine.

5th. As to the quantity of blood which should be transfused.

This of course, it is impossible to calculate. In some instances it

appears by a reference to table No. V. that a very small quantity (2oz.) was sufficient, whilst in other, ten, twelve, and even twenty two ounces, were required.

In those cases where headache, intermitting pulse or restlessness occurred after a moderate quantity of blood had been injected, the operation was mostly discontinued.

In addition to the objections against the adoption of Transfusion which have already been mentioned, there are some others to which I will allude.

1st. The danger of Phlebitis, arising from the irritation to which the vein is subjected by the introduction of a tube, has always been considered a strong objection.

I have however been unable to find one fatal instance of this disease following Transfusion: occasionally symptoms of Phlebitis supervened, but they always subsided under the use of the usual remedies.

2nd. The probability of the admission of air is also brought forward, as an objection. But this danger would appear to be overrated.

Dr. Blundell injected five drs. of air into the jugular vein of a dog without causing death.

Nysten has also proved that small quantities of air are rapidly absorbed.

It is therefore clear, that a few air bubbles would not be productive of ill consequences, and if it be taken into consideration, that when the operation is properly conducted, even this small quantity will be excluded, but little stress can be placed upon this objection.

The strongest objection, and in fact the only one entitled to serious consideration, is the assertion that Transfusion has not the power of causing reaction.

The present inquiry has been chiefly directed to an investigation of this point, so far as such an object can be attained by a reference to recorded cases. How far I have succeeded, in arranging the evidence for the elucidation of the question, it is not for me to say.

I have purposely avoided alluding to the injection of saline and other solutions in cholera, (a point of considerable local interest) as the limits of this communication will not allow of its being fully discussed; should a paper upon this subject in continuation of the present one be deemed worthy the notice of the Society, I shall be happy to furnish it upon a future occasion.

Article. XI.

Medico-Historical Abstract of the 1st year's service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons, at Kirkee, under the Bombay Presidency. By J. W. Moffat, Esq., Surgeon H. M.'s 14th Light Dragoons.

Presented, December 1842.

Her Majesty's 14th Regiment of Light Dragoons hastily augmented from 334 to 501 strong, exclusive of the details left at Maidstone in Kent, for the purposes of a Depôt, recruiting, &c., embarked at Gravesend, on the Thames, in two divisions. The Head Quarters and Right Division, 337 strong, under Lieutenant Colonel John Townsend, on board the Repulse, Reid, Commander, on the 24th May; and the Left Division, 164 strong, under Major Charles Barton, on board the Reliance, Green, Commander, on the 17th June 1841; and arrived in Bombay harbour, the Right Division, reduced by the occurrence of one casualty during the voyage, on the 6th September, and the Left Division, on the 2nd October, following. The troops remained on ship-board in the harbour for three days; their landing being interdicted, and their communications and dealings with those on shore limited, till the tents, equipage, and stores, for the short march in view, and directed to take place with the least possible delay, were provided; when the Regiment disembarked in boats at Panwell, and reached its destined station, Kirkee; the Right Division on the 19th September, and the Left Division on the 13th October, 1841. Here the Regiment was augmented further by the transfer from the 4th Regiment of Light Dragoons, under orders to return to England, of 150 volunteers, disposed to extend their Indian service, who were incorporated on the 1st October.

Considerable experience warrants the propriety of securing to a European Regiment, for the first year at least of its tropical service, the advantage of a residence at Poona, or elsewhere in the country above the Ghauts, where the climate is 10° lower than on the coast, and the air pure,

buoyant, and comparatively dry; and the East India Company's Government have established an extensive depôt at the former place to which all their recruits on arrival at Bombay forthwith proceed.

From the ship the Regiment was transported in open boats across an arm of the sea and by a small river to Panwell, a large straggling village, a few miles inland, at the distance of some twenty miles, to which the tide ascends. Short as is the distance, this passage is often not effected under twenty-four hours, or two tides from the clumsiness and overladen state of the boats. It becomes then necessary that a day's rations should be furnished, good water provided, and that the boats should be protected by awnings from the midday sun and night dews. The low marshy confined position of Panwell renders it any thing but a desirable point for disembarkation, and offers few good encamping sites, especially during the wet season. The consequence has been the production of fever and bowel complaints, and too often, the prevalence of a destructive cholera among the troops who have been unfortunately detained many days there. At the time of the Regiment's landing, although there had been a favorable break in the season, yet the ground was very damp, and the occupation of the tents not a little hazardous. The want of a large shed protected to windward with a good roof and raised floor for the accommodation of the troops so frequently arriving at this thoroughfare, which would add so much to their comfort and safety, was much felt, and the occasion served for enforcing what others had previously recommended,—the economy and advantage of such a building.

In two marches, the first of twelve miles to Chowke, and the second of sixteen miles to Khandala, the top of the Ghauts was attained. Here a large building of solid masonry divided into four or five apartments, built by a wealthy Native for the convenience of travellers, was found unoccupied, and appropriated by the troops. This was a most fortunate occurrence, as the weather proved rainy and tempestuous, and a day's halt was necessary to get up the whole of the baggage, and to rest the cattle. A change of climate was immediately felt; there was no longer experienced the hot enervating oppressive atmosphere of the Concan. Four additional stages of unequal length; the first to Karlee, eight miles, a hot confined situation among the Ghauts, liable to great vicissitudes; the second to Wargaum, twelve miles, now more on the open plain; the third to Booseregaum, fifteen miles, a poor small village surrounded with a mud wall at which no supplies can be obtained with certainty, which was not the case at the other stations, where, meat, poultry, eggs, milk, vegetables, fruit, straw, firewood, &c., from tolerably well furnished bazars

could be supplied; and the fourth of five miles to Kirkee. Spirits, flour, rice, biscuit, tea, sugar, and some live bullocks were required to be brought forward by a provident commissariat. Fresh baked bread at a very little expense might be on such occasions forwarded from Bombay to Panwell, and from Poona to Khandalla and Wargaum, which would be a great boon to the troops, and a vast improvement over the present issue of stale biscuits.

With every precaution, not neglecting a free supply of straw to the tents to cover the damp ground, it was found, chills at night were experienced, and the more dangerous, from the irritable state of the bowels induced by the sudden change of water and to fresh meat and a vegatable and mixed fruit diet;—the heat of the tents in the day time was trying, and occasional exposure to the sun's rays was unavoidable. The consequence was the frequent occurrence of diarrhœas, flatulent colics, dyspepsies, and more rarely fever, common or bilious, with now and then a case of marked determination of blood to the head. Where there were much nausea and oppression at præcordia, the exhibition of an emetic was of signal benefit; but generally in the bowel complaints, although often accompanied with much pain and spasm, and even with coldness of extremities, a mild opiate of a few drops of solution of muriate of morphine with a carminative of essence of peppermint coupled by quietness in a dry warm bed, and the application of heat to extremities and abdomen, allayed the inordinate action. When the nausea, occasional griping, and variable purging continued, shewing that the cause of irritation was not removed, or that the biliary secretion was irregular, a small dose of calomel with a minute portion of Ipecacuan, and muriate of morphine followed after three or four hours with a dose of compound powder of jalap or of castor oil, was exhibited usually with relief, when quietness and abstinence were rigidly adhered to. In the cases more marked with pain and irregular distribution of temperature, and even in those where the determination of blood to the head was striking, as they seemed connected with overloaded stomach, an emetic of Ipecacuan grs. xxv. with carbonate of ammonia ℈i with the additional means of equalizing the heat of surface was always of service, often prevented the necessity of blood-letting and always reduced the violence of the symptoms.

Kirkee, the only station under the Bombay Presidency provided with permanent accommodation for a Regiment of European Cavalry, embracing an area of some four square miles, is well defined by the river Moula, which meeting an obstacle to its direct south-easterly course in a

spur or unequal line of hill from four hundred to two hundred feet in height, running in a north-easterly direction from the western Ghauts, is turned to a northerly course for three miles, till, reaching the extremity of the ridge, for the last mile elevated only thirty or forty feet, it is enabled after a short easterly run to resume its southing. On a low part of this ridge near its extremity, on which somewhat more elevated ground the village of Kirkee is situated, and its sloping sides, enclosed within the deep sweep of the river, the military cantonments are placed. They lie E.S.E. from Bombay, about two and a half miles to the north of the city of Poona, with the river Moota interposed, close on the right bank of which the city stands, and which is crossed by a fine bridge, half a mile lower, or to the N. by E. at the Sungum immediately before its junction with the Moula.

The most direct and new post road from Bombay to Poona, which intersects the Kirkee cantonment, turns off in an easterly direction from the road by Panoula, about five miles after passing Wargaum, and a most durable bridge has been lately finished over the Moula, on the N. by W. to connect the road. On the east again, another bridge, the old Kirkee, is thrown across the Moula to connect the Seroor and Ahmednuggur road. By the new road, and an excellent one it is, Kirkee cannot exceed sixty-two miles from Panwell, and communication with Bombay is easily effected within eighteen hours.

The station is celebrated as the spot chosen by Mr. Elphinstone in 1817, then Resident at the Peishwa's Court, to make a stand with his Subsidiary force scarcely numbering three thousand Sepoys, or three Battalions under Colonel Burr, against the suspected treachery of the Peishwa, and where he repulsed a sudden attack made by the Mahrattas in force exceeding twenty thousand.

About two and a half miles dirictly S.E. with two rivers interposed, the the Moula and the Moota Moula, or four and half miles by the high road cross the Sungum bridge, the Poona cantonments are placed. The ridge on which the cantonment is built, although not exceeding forty feet above the bed of the river, commands the view of an extensive bare plain almost destitute of trees to the north, and relieved only by a few detached rather remarkable high conical hills, the Cid hills, at two or three miles distance across the river to the N. E. which run diagonally with the Kirkee ridge, or east. A ridge of a few hundred feet in elevation, and running more easterly, having the temple of Parvati on its extremity which overhangs Poona, breaks the view at three miles distance to the S. W. beyond which further south, and running E.N.E. is a very lofty range of

mountains, among which are the forts of Singhur, Poorundhur, &c., rising upwards of two thousand feet. The western Ghauts are at the distance of thirty miles. The plain slopes downwards to the east very gradually, and is estimated at Kirkee, sixty miles inland, at about one thousand eight hundred and twenty feet above the sea, and between four hundred and five hundred feet below the parallel chain of Ghauts.

The surrounding hills are of the trap formation. The ridge on which the Kirkee cantonment is built, consists chiefly of a bluish grey broken-down basalt. In one or two places where more massive, the rock is quarried for its hard dark bluish stone. This rock is scattered about naked, but generally has a thin sterile clayey and gravelly soil of a reddish colour overlaying it, bearing with difficulty in the rainy weather some coarse stunted grass. The slopes, however, are in many places furnished with a heavy loamy soil, which, with the addition of some light manure, the ashes of burnt branches, leaves, and weeds, bear fair crops of the esculent grains in common use; Jowaree, Holcus Sorghum; Bajree, Holcus Spicatus; Ragie, Cynosurus Coracanus, in the monsoon, and certain pulses in the cold season following, which derive their nourishment from the heavy dews. In a few places the heavy black cotton soil of variable depth is found, which yields with little culture rich annual crops. A few fruit and other trees of natural growth are met with in the course or neighbourhood of the river, as the Mango, Mangifera Indica; Tamarind, Tamarindicus Indica; Neem, Melia Arzadarachta; Babool, Mimosa Arabica, &c., but many are cultivated, and with care attain great perfection.

The station is almost entirely dependent on the river, and the monsoon rains for water. Six or seven wells have been dug through the solid rock in different parts of the cantonment, and the springs have been reached about the depth of twenty-six or thirty feet. They afford a scanty supply, even with the surcharge of water received from the monsoon rains and occasional showers, and generally before the hot dry season has passed they are nearly exhausted. The water, however, is of a pure hard quality after depositing a moderate earthy sediment. It would require a depth of seventy feet to be reached to secure any steady supply. But the river prevents an absolute want of water, being in some places under a mile's, no where, above two miles's distance. It is here between twenty and thirty yards in width, and two feet in depth, running sluggishly over a gravelly or rocky, but in many places, a rich muddy bottom. During the monsoon rains it rises from twelve to twenty feet, and forms a strong rapid heavy current of muddy water. Fish, trout, murrell, eels, are often caught

in it, and they have been found wholesome. Delicious water-melons grow along its sides.

The cantonment is much exposed. The winds and seasons are here the same as throughout the Deccan. The hot parching northerly winds of April and May are felt very severely, and the glare and heat then from the light bare soil are most intense. Luckily it is not entirely beyond the influence of the alternate sea breeze in the afternoon, which, although frequently slight, and then lessened or interrupted by the higher land to the west, is generally sufficient to give it fresh cool evenings. It has a bleak, dreary aspect during the prevalence of the S. W. monsoon, from the violence of which, however, it is most protected.

Besides the small village of Kirkee on the higher extremity of the ridge to the N. E. and from which the station derives its name, there is another small village Bapooree, about $\frac{3}{4}$ of a mile to the N.W.; and, since the permanent settlement of a regiment, there has arisen a large native establishment of horsekeepers, camp-followers, and shopkeepers, where a bazar is established for many necessary wants, but which is not so much resorted to from the proximity of the city of Poona, and a better supplied military bazar adjoining. On the further side of the river northward, all within two miles distance, are three or four other villages, viz. Dapooree to the N.W. in the immediate vicinity of which there is a residence for the Governor when he chooses to visit the Deccan. A botanical garden was laid here in 1828 on the banks of the river, but it does not receive much attention, apparently. Bopgaum or Bopgale to the N., Kullus to the N. E. and again to the south, but without crossing the river at the base, as it were of the station, we have Waree.

The inhabitants of these villages are few in number, inoffensive, very poor, of the Deccany caste of Hindoos, and are chiefly occupied in the cultivation and watching of the neighbouring grounds, in tending cattle, and other labouring work. Their houses are imperfect, low thatched, mud hovels, huddled together, and surrounded with all sorts of filth. The whole neighbouring population, exclusive of the camp-followers and regimental bazar, may not exceed eight hundred souls.

The district does not bear a good reputation for health; the water is not esteemed, the climate is considered cold, the bazar not well supplied. The average term of life amongst them is estimated at thirty-five years, but there are at present several people living between seventy and eighty years of age. There seems no particular endemial disease, but remittent fever and agues are very prevalent, and easily excited by exposureto an

easterly wind, or after any excesses or fatigue. The prevalent sickness arises from want of proper nourishment and protection from a variable climate ; hence glandular disease is obstinate and common, rheumatism prevails, and many cases of idiotcy may here be met with ; and epidemic disease, when it appears, makes dreadful ravages ; visitations of cholera or of small pox only ceasing with the failure of victims.

The *Barracks*, &c., were erected in 1826 and 1827, and taken possession of in June 1827. They are built in six parallel lines of pendals, or barrack rooms, from E.N.E. to W.S.W. with the front to N.N.W. The front line is appropriated for the eight troop's Serjeant Major's quarters. The four centre lines contain four long barrack rooms or pendals in each, and in the rear line are placed the Quarter Master's stores, the school room, the Serjeant Major's Quarters, the Canteen, two cooking houses, and the regimental artificers' shops. They are constructed of half burnt brick with chunam, thatched over with straw and leaves and having a flooring of well cemented gravelly clay. They have an airy appearance, and are found to be dry. Each line of building is separated by a street 190 feet broad, and the rooms in the same line are distant from each other 116 feet. The rooms in the different lines are not placed directly in the rear of each other, but chequer-ways. The barrack rooms consist of a single story, the floors of which are raised about two feet above the ground, have a tiled verandah on the rear and left or western gable seven feet in breadth, with a portion at the angle built up for keeping water and for the purposes of personal ablution. Each room is $109\frac{1}{2}$ feet long, 11 feet of which at the eastern end is partitioned off and subdivided for two non-commissioned officers ; $23\frac{1}{2}$ feet broad, and 20 feet high to the centre ridge of the roof or $11\frac{1}{2}$ feet by the side wall, with 4 doors and 20 windows placed opposite to each other. The windows are raised $2\frac{1}{2}$ feet above the floor, and are 5 feet by 3 feet in size, filled with teakwood boards which are divided into three unequal parts, the upper part of which opens upwards and outwards, and the two lower inwards. Three chimney like venetianed ventilators are placed on the ridge of the roof.

The barracks are calculated to accommodate a regiment 700 strong, each room being capable of containing with ease and comfort 38 men and 2 non-commissioned Officers, each of whom has thus a space of upwards of 1400 cubic inches.

There are two privies, one on each flank, large and commodious, placed at the distance of 150 feet, and, from the excrement being received in baskets and removed every morning, any unpleasant smell rarely extends far, and is generally prevented. Reservoirs for the urine have been dug at a lit-

tle distance from the S.W. angle of each barrack room which has a walled shelter attached with a pipe. These reservoirs are covered, and of such a size as to obviate the necessity of emptying them for six months, although opened and cleared out every other day.

About 100 yards distance on each flank a street of stone, mud, and thatched huts is built to the number of 20 or thereabouts, with a distinct privy, for the accommodation of the married soldiers, none of whom, excepting serjeants occupying the partitioned ends of the pendals, are mixed with the single men in barracks.

There is a considerable extent of clear space around the barracks, in front to the extent of 100 yards used as a private parade ground for forming and inspecting the troops, and in the midst of which is the main guard-room, and beyond which the horses are picketed. In the rear there is a wider space of about 150 yards between them and the line of Officers' Bungalows, which is used as a foot drill ground, and in which the rear guard-room is situated. On the southern slope of the ridge extending to the river are the large and sterile lawns or compounds of the Officers, and the extensive open plain on both sides affords ample ground for field exercises and riding instructions. About 100 yards to the right of the barracks, situated at the extremity of the open space in front, in an airy dry situation, are twelve square buildings of brick and tiles, in three lines, each 10 feet square, which are the cells for the solitary confinement of prisoners. They have a door and are ventilated by oblique barred openings in the upper and lower parts of the walls.

At the distance of from 300 to 700 yards to the left or westward of the barracks, a little in advance of their front line upon a more elevated spot and with an open approach, the *Hospital* stands. This building is of later erection than the barracks. It was finished in 1830, and first occupied in June of that year. It is a large irregular oblong structure, built of burnt brick cemented with chunam, and tiled, with a flooring of flagstones raised between two and three feet above the surrounding ground. It has a N. N.W. aspect, and is dry and airy. The wards form three sides of a square open to the N. N.W. enclosing an area of $91\frac{1}{2}$ feet by $121\frac{3}{4}$ feet. Each side forms one large ward except that on the south, which is divided into two, by a passage leading into the surgery. The two side wards are each 90 feet long, 24 feet broad, and $22\frac{2}{3}$ feet high in the centre, or 16 feet high by the side wall, with two doors, 8 feet by $4\frac{1}{2}$ feet, and fourteen windows $6\frac{1}{2}$ feet by $3\frac{1}{2}$ feet, placed $3\frac{1}{2}$ feet above the floor, and three chimney-like ventilators on the ridge of the roof.

The doors are of teakwood, and the windows of glass painted green which open inwards. Such a spacious ward, with nothing to obstruct the circulation of air, and furnished simply with light iron bedsteads and plain teapoys, contains conveniently thirty-eight patients. The southward side is divided into two wards of smaller dimensions of 56 feet long each, but corresponding in width and height, with two doors and eight windows, one of which in the south wall is very large, $6\frac{1}{2}$ feet by 7 feet, and each capable of containing twenty-three patients. For this climate the sick in hospital might be considered crowded in the numbers calculated above, or one hundred and twenty-two in all which gives 1100 cubic inches of space to each; but the accommodation if confined to ninety is most commodious.

These wards have a verandah in front 9 feet in breadth, defended at its outer edge by a wall 2, 5-6th feet in height, from which issue several wooden posts for the roof. The verandah of the side wards is extended backwards to an after area formed by the various office-houses of the hospital, affording a walk of upwards of sixty yards.

This after area is $121\frac{3}{4}$ feet by 42 feet, and has on its north side the surgery 8 feet by 20 feet, and two other rooms for the medical stores and an office; besides at each extemity opening from the side verandah a small ward with one door and window for the accommodation of any particular cases requiring solitude or separation; opposite are the steward's store-room and the apprentices room, and the cooking house; and jutting out from the corners of this line and at the termination of the side verandahs the privies are placed, each 20 feet by 10. Contiguous to the stewards store-room but opening from the outside without the gate of the after area, is a room for the reception and examination of dead bodies, 20 feet by 10 feet, and at the distance of 210 feet. Quite detached, is a small building used as a female hospital, containing a room 30 feet long, 18 feet broad, and 14 feet high, with two doors and four windows, capable of accommodating 10 women; and two verandah rooms in the south, 12 feet by 8 feet for the nurse and midwifery cases, with small adjacent but detached cookhouse and privy.

Two bungalows have been built, one at each side east and west of the hospital at the distance of nearly 100 yards, for the accommodation of the apothecary and steward; and at the distance of nine feet in front of the side wards are the detached houses or rooms for the hospital serjeant and the hospital guard. A considerable space of ground around the hospital is enclosed by a prickly pear hedge for greater seclusion and protection, and which is kept clean and free of all rank or decaying vegetation.

To the excellent accommodation just described, little fault can be found, and there is small room for improvement. The ventilators have not answered, being so much exposed and open, that, during the wet monsoon, they exclude neither the rain nor the raw damp air, although dammered at top, and the side venetians protected with bamboo matting. Narrow oblique openings in the upper part of the side walls, which would be protected by the overlapping roof, would answer far better the object of promoting the escape of the heated air and permitting a free circulation. Were the verandah to surround the pendal, instead of being confined to two sides, great additional comfort and coolness would be gained.

Public water carriers are employed to bring fresh daily supplies of clean water for drinking and the purposes of washing. One side of the washing room has two tiers of shelves of solid masonry for supporting the globular earthen vessels which contain the water, and in the other side is placed an open mouthed barrel with a tub or two for water for general purposes. A trough, provided with a stop cock to allow the easy escape of the dirty water, and capacious enough to permit three or four men to wash their hands, &c. at the same time, is fitted up at a convenient height. There are no recesses to harbour filth in the barrack rooms, every man's appointments and necessaries are placed on pegs or thin wooden shelves fixed at a sufficient height by the side of his bed, which is provided by the public, and consists of boards and trussels raised about two feet above the floor, and under which his box, agreeably to regulation, can be thrust and kept. Tables and forms are provided also for the convenience of messing, and a scale of diet is laid down, and furnished by Government at a reduced rate to the soldier. The daily ration drawn for each man, not in hospital nor in imprisonment, is bread 1 lb. 2nd sort, beef 1 lb.; rice 4 ozs.; salt 2 ozs.; coffee or tea 5-7th ozs.; sugar $1\frac{1}{2}$ oz.; firewood 3 lbs. with one dram of arrack at the option of the soldier, to be consumed at three regular meals, breakfast, dinner, and supper.

The men are messed in squads of four, and native cooks are entertained, at a small weekly cost, who are further engaged to provide milk for the tea or coffee, butter, eggs, steaks, chops, additional vegetables, cheese, &c. as they may be occasionally asked for by varying tastes and appetites. The station being in such proximity to a populous city, all sorts of supplies are procurable in abundance, and little could be altered in the ration for the advantage of the men beyond the occasional variety of mutton. The supply of vegetables probably is wisely left to the choice of the messes, and for the rice, which is not much relished, over and above what is used for the soup, unless when curried meat is the order of the day, the cooks

are not averse to substitute carrots, onions, country greens, and occasionally pumpkins, yams, &c. A dram of spirits still continnes to be offered to the men at dinner time, and an inducement to take it is held out in its issue at a lower rate by one-fourth than its ordinary retail price. The issue of a ration dram is a relic of former times, when salt meat and stale provisions were the ordinary and only rations provided, but surely, it may be well dispensed with when mixed fresh provisions of an excellent and wholsome quality are supplied, and its continuance leads to a wrong impression of its utility and necessity. If a boon is to be conceded in the shape of liquor to be added to the solid ration, let it be in something of a less pernicions quality and tendency, and I have no doubt, were Government to take the trouble of providing good beer for the troops, it would be more than repaid in the improved morale and health of the army, and would indemnify itself for the immediate pecunairy outlay very soon, by being enabled, from the large consumption, to issue it at a profitable price, still within the means of the soldier, and even sufficiently low to lead to its being sought after. On board of ship, porter has been already substituted for rum with most excellent effect.

After this brief description of the station with its accommodations, and supplies, it will be necessary next, before entering upon the diseases which have prevailed, to give an exposition of the constitution and state of the Regiment on its arrival at it. The period chosen for its arrival in India was the latter portion of the moosoon, and but for a favorable season, might have proved unfortunate. The rains ought to have ceased before the arrival of troops. Exposure to the intense damp of the tropical rainy season, before the primary arrangements for establishing troops with the necessary comforts are completed, gives a severe shock to the constitution, even when no particular disease is immediately excited, and from my experience, I am satisfied of the advantage of embarking troops, from England for Western India in the weeks following the first of July. The Regiment, five hundred strong, arrived at Kirkee in a healthy efficient state. From the excellent regulations and arrangements now enforced by the Company for the transport of their troops, the men maintained their health and spirits throughout the voyage of four months, and disembarked in good condition. One casualty only having occurred, in a man formerly a buffoon at Astley's amphitheatre, who, having sold his boots to a sailor for liquor, lay down on deck under its influence, and was finally detected with his feet wet and shaded, and his head exposed to the direct meridian rays of the sun. He was awoke to be informed that he was a prisoner, and soon afterwards he reported himself sick. He laboured under intense

fever with irregular distribution of heat ; delirium soon supervened, and he died comatose within five days.

Of the twenty cases reported unfit for duty and sick on reaching Kirkee, scarcely one was confined to bed. External disease, or superficial inflammation, ulcers, accidents, &c. chiefly filled the list ; seven cases only of internal ailments being under treatment.

After being augmented by the addition of one hundred and fifty volunteers, the state of the Regiment, as to age and Indian service, is shown as follows :

Strength 650.

Ages.	Number
Under 18 years	5
From 18 to 20 do	161
do. 20 to 22 do	130
do. 22 to 25 do	116
do. 25 to 30 do	70
do. 30 to 35 do	119
do. 35 to 40 do	48
do. 40 to 50 do	1
Total .	650

Indian Service.	Number
Under 1 Year	498
do. 2 do	13
do. 5 do	22
do. 7 do	11
do. 10 do	15
do. 15 do	67
do. 20 do	24
Total .	650

I shall now proceed to shew the deaths from all causes that have taken place in the Regiment from 1st September 1841, to 30th September 1842.

	Serjeants.	Corporals.	Privates.	Total.
Strength	46	32	572	650
Deaths	3	7	26*	36

In these deaths is included, one, a corporal found dead, cause unknown.

Ages and period of Indian service at which these deaths, exclusive of the one found dead, occurred.

Ages.	Number
From 20 to 22 years	13
do. 22 to 25 do	10
do. 25 to 30 do	3
do. 30 to 35 do	4
do. 35 to 40 do	5
Total .	35

Indian Service.	Number
Under I year	27
do. 2 do	1
do. 5 do	1
do. 7 do	1
do. 15 do	3
do 22 do	2
Total .	35

* 8 are volunteers.

The diseases by which these deaths, and the whole admissions into Hospital in the course of the year, have been occasioned, are stated in the following return.

Classes of Disease.	Specific Diseases.	Non Commissioned Officers and Privates.			
		By each Diseases.		By each class of Diseases.	
		Admitted.	Died.	Admitted.	Died.
Fevers	Febris Quotidiana Inter	6	..	379	5
	do. Tertiana Intermittens	5	..		
	do. Remittens	61	..		
	do. Continua Communis	307	5		
Diseases of the Lungs.	Pneumonia	1	..	27	..
	Hæmoptysis	1	..		
	Catarrhus Acutus	20	..		
	do. Chronicus	5	..		
Diseases of the Liver.	Hepatitis Acuta	8	2	12	2
	do. Chronica	1	..		
	Icterus	3	..		
Diseases of the Stomach and Bowels.	Dysenteria Acuta	62	2	289	4
	do. Chronica	1	..		
	Dyspepsia	23	..		
	Diarrhœa	155	1		
	Obstipatio	7	..		
	Cholera Morbus	1	1		
	Colica	40	..		
Cholera	Epidemica	55	22	55	22
Diseases of the Brain.	Apoplexia	2	..	12	2
	Paralysis	4	1		
	Delirium Tremens	4	1		
	Epilepsia	2	..		
Rheumatic Affections.	Rheumatismus Acutus	22	..	25	..
	do. Chronicus	1	..		
	Odontalgia	2	..		
Venereal Affections.	Syphilis Primitiva	56	..	184	..
	Ulcus Penis, N. S.	15	..		
	Bubo Simplex	23	..		
	Gonorrhœa	60	..		
	Strictura Urethræ	1	..		
	Hernia Humoralis	22	..		
	Cachexia Syphiloidea	2	..		
	Phymosis	3	..		
	Verruca	2	..		
Ulcers and Abscesses.	Phlegmon et Abscessus	111	..	197	..
	Paronychia	1	..		
	Ulcus	85	..		
Wounds and Injuries.	Luxatio	1	..	83	..
	Subluxatio	20	..		
	Vulnus Incisum	21	..		
	do. Sclopitorum	1	..		
	Contusio	37	..		
	Ambustio	1	..		
	Fractura	2	..		
Punished	Punitus	2	..	2	..
Diseases of the Eyes.	Ophthalmia Simplex Membranorum	18	..	18	..
Diseases of the Skin.	Papulæ	21	..	48	..
	Squamæ	4	..		
	Exanthemata	5	..		
	Bullæ	1	..		
	Pustulæ	9	..		
	Vesiculæ	8	..		
Other Diseases.	Cynanche Tonsillaris	13	..	38	..
	Splenitis	3	..		
	Otitis	1	..		
	Hæmorrhois	5	..		
	Vermes	2	..		
	Dysuria	1	..		
	Varix	1	..		
	Tumores	4	..		
	Necrosis		..		
	Dracunculus	17	..		
	Total	1369	35	1369	35

The large proportion of casualties among the Non-commissioned Officers, amounting to one-fourth of the whole, or one in nine and a half, compared with that of the privates, one in twenty-two, requires some notice. It may be partly accounted for in the greater exposure to which they are subjected, especially at first, before the arrangements for Native Orderlies can be completed. The necessity of employing Native Orderlies ought to be fully impressed on Commanding Officers of troops, without loss of time, and their attention ought to be especially called to the disproportionate deleterious influence of the vertical rays of the sun in a tropical climate, to those of a more oblique direction in higher latitudes, where the heat may be felt temporarily almost equally intense. A recklessness on their own part often leads them to slight the cautions advanced on unnecessary exposure, and it requires the most stringent regulations, and the greatest circumspection on the part of their Officers, to render them more careful. Two Corporals and one Private fell victims under fever from this cause. The fever being complicated with subacute phrenitis; low delirium quickly appearing, and coma supervening. Death took place in all within five days. What increases the ill effects of fatigue and exposure in this class is, that they have increased means of purchasing refreshment, and, when jaded and heated, they thoughtlessly seek to relieve their sense of sinking and oppression by a recourse to drinking. Spirits only are conveniently within reach, and their price is best suited to their means, which is another strong reason for repeating the recommendation of Government's exerting itself to provide a less hurtful beverage. In several of the cases of fever, symptoms of delirium tremens were very marked, and, although they did not terminate fatally, these cases underwent dreadful shocks, and they were long ineffective. One case of fever, or rather of gastro-enteritis in a young man, reduced from Corporal in consequence of his yielding to drinking, was purely the result of excess in spirituous potations. The fatal and two other cases of delirium tremens occurred in Non-commissioned Officers. A long residence in India gives no immunity from the noxious effects of exposure to the sun, but disease then is of a more insidious character. The fatal, and one other case of paralysis, were owing to the conjoined effects of exposure and drinking, in men, volunteers, of quiet regular habits, yet seldom a night without being muddled, and thoughtless of midday exposure.

The regiment continued healthy till the latter end of October, when fever began to prevail epidemically, and soon obtained a great height. It subsided within the first fortnight of December. The numbers primarily attacked were one hundred and ninety-seven. The weather then was

considered unseasonable. A powerful clear sun, with sudden thunder storms, atmosphere variable, and great diurnal vicissitudes; some days, a fine breeze, cool and bracing, occasionally even raw; others, still and sultry; some nights, chilly and damp; others, close with a warm air. Luckily no case proved fatal. Its type was continued, or the remissions were at first very imperfect. It became in its course decidedly remittent, but rarely intermittent; relapses were regular intermittents, shewing how complete are the relations of the several types of fever, and that a vertical sun and atmospherical vicissitudes on a barren waste, just as effectually produce them, as marsh and jungle malaria, only in less intensity. Moreover, I have repeatedly witnessed, remittent and intermittent fever present in men under treatment for external disease, as syphilis, gonorrhœa, simple bubo, giving the suspicion of simple loss of nervous tone being sufficient to induce periodic febrile action. The duration of the disease under consideration was from three to five, seldom protracted to seven, days. The symptoms were those of simple excitement with great nervous depression, attacking rather suddenly with chills and heats, faintness or sense of prostration, headache, vertigo, frequent soft pulse, nausea, white tongue. Emetics at the commencement often followed with an opiate of morphine combined with potassio-tartrate of antimony to secure a diaphoretic effect at night, an alterative dose or two of calomel, attention to the bowels without drastic purgation, saline diaphoretics, spoon diet, and quinine on the earliest appearance of a remission, with a gradual increase of a light diet, were the measures successfully pursued, and they seemed to afford relief. Bleeding was rarely resorted to. In some cases, leeches were applied to the temples or to the pit of the stomach, and blistering the nape of the neck was occasionally thought necessary. The beneficial influence of the quinine, when exhibited on the slightest remission, was most marked. The fatal cases, as already noticed, that occurred, were sporadic, and attributable to direct exposure to the sun and excesses in drinking or other irregularities, and were of a more decided inflammatory character than the epidemic just described. One, a Serjeant sunk, after being convalescent from fever and apparently doing well, from great nervous depression during the prevalence of cholera. In few of the more urgent cases was general bleeding resorted to, although the best effects and speedy relief resulted from local bleeding and blistering, with the free use of calomel, antimony and morphine, in small repeated doses.

The health of the men was soon re-established after the subsidence of this acclimating fever, and the efficiency of the Regiment continued good

till the month of May 1842, when it experienced, a dreadful shock from an invasion of cholera. It this month fifty-three cases of cholera presented, of which twenty proved fatal. Two sporadic cases of great intensity occurred and terminated fatally, one in the preceding, and another in the following month. One case only has not been included under the head as *epidemic cholera*, being apparently the collapse succeeding a debauch on Christmas in a man of usually quiet temperate habits. He neglected to report himself on the supervention of a severe diarrhœa, was overlooked for a day, and finally brought to hospital against his will by a comrade in a dying state. No Commissioned Officer was attacked, but the disease proved fatal to four Non-commissioned Officers. Soldiers of all ages and periods of service were attacked, residence in India gave no immunity; but while many hard drinkers enjoyed excellent health, the large proportion of fine young soldiers of regular temperate habits attacked was remarkable. Neither were women nor children exempt, and several cases among them proved fatal. It raged among the surrounding villagers and natives as a pestilence. The remote causes were obscure; some very cold nights, followed by sultry cloudy days, and rather variable weather, were remembered to have preceded, and did accompany the disease. Severe colics and diarrhœas attributed to an abundant fruit season of melons, mangoes, &c., had become rife. There seemed withal, however, reason to suspect its dissemination from intercourse with a diseased nucleus. The regiment was remarkably healthy; a fatal sporadic case with all the symptoms of epidemic cholera had certainly occurred, but was almost forgotten, when a party of seventy-five mounted men were ordered to occupy the Horse Artillery barracks at Poona, in consequence of the destruction by fire of two large barrack rooms and many of the detached huts at Kirkee. Cholera had been prevailing very lately in the Poona military cantonments, and appeared soon after the arrival of the 1st Bombay European Regiment, which had suffered on its march from Bombay. The party had not remained a fortnight at Poona, when two cases of cholera presented; two others soon followed, in the mean while the two first died, the others became rapidly moribund; more cases occurred in the night, two of which eventually died. On the next day the party returned to Kirkee. But the disease clung to it. About twenty-three cases occured in the detachment within the week after its return, of which seven proved fatal; one, a relapse, that had been seized at Poona, but sent to Kirkee, on the appearance of a favorable re-action. The remainder took place among the general body, which had not quitted Kirkee, of which eight terminated fatally. The disease prevailed extensively

and in virulence for one week only, within which period sixteen of the fatal cases took place. It ceased for a day or two, when a few more cases were seized, and then suddenly disappeared. The average duration of the fatal cases under treatment was eleven hours. Two died in four hours.

Of the Fatal Cases.

The Ages were,

2 at 20 Years.	2 at 24 Years.	1 at 34 Years.
4 at 21 do.	1 at 26 do.	1 at 36 do.
3 at 22 do.	1 at 28 do.	1 at 38 do.
4 at 23 do.	1 at 32 do.	1 at 40 do.

The Indian Service was,

15 under 1 Year.	1 under 3 Years.	2 under 15 Years.
1 do. 2 do.	1 do. 7 do.	2 do. 20 do.

Violent action of the primæ viæ was an early, if not the earliest, symptom, but many were simultaneously seized with vertigo, and sense of faintness, and a vomiting, and seemed the consequence of impaired cerebral action. Nausea and griping, vertigo and faintness, purging and vomiting, with rapid sinking of features, indescribable feelings of illness, haggard pale expression, oppression at præcordia, thirst, cold extremities, doughy feeling of skin, clammy perspirations, husky voice, and thready pulse, were the symptoms described and met with in the early stage. If not relieved, spasms of the legs and feet, of the hands and arms, pain of left side of chest, or in back, sense of heat and intolerable anxiety in chest, came on in paroxysms, under which the powers of life failed, the pulse was no longer perceptible at the extremities, which were shrivelled; the eyes were sunk and bloodshot, the countenance and patches of the skin livid, there was low tumultuary action of the heart, and great thirst and jactitation prevailed; want of sympathy or apathy of the future was very evident, but the intellect continued clear with occasionally short bursts of delirium or rather of agony; death often taking place suddenly, but occasionally with protracted coma. The evacuations from the stomach and bowels were at first frequent, copious and of a dirty serous nature, but, as the spasms advanced, they became infrequent; the urine was scanty throughout. From the hurried and frequent calls on our time, careful, and minute autopsies were out of the question; but the fine vermilion blush of the peritoneum, the varicose enlargement of the vessels of the stomach, the turgidity of the large veins and right side of the heart with an adhesive pitchy looking blood, the congested condition of the ves-

sels of the brain, and a finely injected state of the vessels of the spinal marrow, were in all examined, the most uniform anatomical appearances.

The cases that were seen and subjected to treatment in the first stage generally did well. Those in which spasms had commenced were more doubtful, and deaths and recoveries were nearly equal. When the spasms had passed, or greatly subsided, fatal collapse was witnessed. The duration of these stages was variable; the first, in some cases, lasting from twelve hours to even three days, in others, being succeeded by the spasms in an hour. The term of the spasms was short, and the period of collapse varied from three to nine hours.

When seen in the early stage, and there were much nausea and oppression at præcordia complained of, emetics of ipecacuan, and carbonate of ammonia were usually prescribed, and with good effects, followed by a large dose of calomel, and a draught of tincture of muriate of morphine ʒss. and of aromatic spirits of ammonia ʒi, with essence of peppermint m. xv. Leeches or sinapisms to the pit of the stomach or the nape of the neck were often resorted to, and bottles of hot water, bags of hot salt, or hot bricks, were applied to the extremities and for the purpose of general warmth. Weak warm brandy and water, or sago and wine, or soup, was allowed as a drink or light nourishment. If the pain, purging, vomiting, and sense of faintness abated, and the heat seemed more equally diffused with a thin warm perspiration, little else was done beyond the administration of a purgative of pulvis jalapæ. comp. or a turpentine enema; the attention being chiefly directed to quietness, keeping up the heat of the surface, and mild nourishment. When the vomiting was more urgent, saline effervescing draughts containing an excess of soda and a few drops of tincture of muriate of morphine with small doses of calomel and morphine, repeated at intervals of $\frac{1}{4}$, $\frac{1}{2}$, 1 or 2 hours, seemed to have good effect. In some slighter cases a timely draught of tincture of muriate of morphine m. xxv. aromatic spirit of ammonia ʒi, brandy ʒii in peppermint water, and attention to keeping up the general warmth often arrested the morbid train. Where spasms of the extremities had commenced, characterized more by their agony than the violence of the muscular action, powerful frictions with stimulant liniments, or the application of hot sinapisms or scalding turpentine, gave temporary relief, but the efficacy of the internal remedies was doubtful. Hot brandy and water often increased the sense of internal heat, thirst, and anxiety. Saline effervescing draughts as above, or cold water, gave more decided relief, yet here even, calomel and morphine had often a marked good effect, and the stimulant draught as above

repeated agreeably to circumstances, seemed to excite the circulation. Draughts of common salt with or without carbonate of soda, in the proportion of ʒii of the former, and ℈i of the latter, in ʒiv of water, were exhibited, and although at first exciting vomiting, were quickly tolerated, and had a marked effect in raising the pulse. In one or two cases the warm bath was resorted to, but with injurious effect in reducing the heat and increasing the exhaustion. Stimulating turpentine enemata seemed generally to produce beneficial re-action. In reviewing the practice I have to regret, that bleeding was not more resorted to. It would have afforded, I have no doubt, such relief to the oppressed thoracic viscera that the other means would have had more effect.

It is difficult to say, what general measures are suitable to be adopted during the threatened attack and prevalence of a complaint, the causes of which are in such obscurity. At the risk even of exciting alarm I should insist on all intercourse with the quarter in which and the body among whom the disease appeared being interdicted, for although contagion is not suspected, a distemperament of the air giving the predisposition seems in my opinion produced, and is not quickly corrected, but all unnecessary alarm must be avoided, a manly confidence being a great protection. Severe diarrhœas prevailing among us at the appearance of the disease and accompanying it, which might have been influenced by the plentiful consumption of mangoes, melons, &c., it was thought prudent to have a strict watch over the quality of the fruit allowed to be exposed for sale. A light warm drink of coffee, or conjee, prepared by the cooks in time to be served to the troops before turning out in the morning, and the reduction of night duty as much as possible with a generous diet, are proper measures. It may seem incredible, but the men at such a time require to be urged to apply for medical relief on their earliest feelings of indisposition, and especially on the first appearance of any relaxation of the bowels. They are averse to give in or to think themselves affected with the prevailing illness, and prefer taking themselves to the canteen, and trying the effects of spiced spirits, the powerful stimulus of which on the deranged action of the stomach too often increases the malignity of the symptoms.

The Regiment passed its first monsoon very happily; a number of cases, but of ordinary disease certainly presented, but generally in no great intensity; still towards the latter part, when, either from the increased weakness of the system, or the sudden return of hot weather, disease became less tractable. Bowel complaints have presented throughout, easily accounted for in the exposure to a vertical sun, night air, great diurnal

range of temperature, and variable states of atmosphere, throwing the organs into states of alternate high excitement and torpor, with irregularities of diet and carelessness in avoiding chills, after being heated. Morphine with some carminative to allay inordinate action, calomel to correct, and ordinary means to remove depraved secretion, the resources for equalizing the circulation, and the deprivation of all noxious stimulants, soon restored healthy action. One great desideratum during the prevalence of the rainy weather that I may mention, was the want of stoves especially in the guardrooms, for enabling the men to dry their wet clothes, and to warm themselves, after their tour of exposure on sentry. I have no doubt they would materially conduce to their comfort, and would lead to a more speedy rally from the shock the system must have undergone, and, what is more essential, would ward off many attacks of illness; for nothing, in any country, but especially in India, wears out and weakens the constitution more than the repeated disturbance of the night's rest, and the prolonged exposure to the night air. From what has been stated it will be inferred that, with the exception of the attack of cholera, disease has presented during the last year in an unusually mild degree. But, mild as first attacks in healthy sound constitutions have been, they are treacherous and insidious. In the instance of fever, convalescence requires to be carefully watched, the primæ viæ do not recover their tone for a long time, and the least excess of diet, too early exposure to night duty, or any slight irregularity at the principal phases of the moon, surely entails a relapse. This relapse may assume a remittent or quotidian type, very frequently a tertian with daily paroxysms of varying intensity and duration on alternate days, but seems under the control of quinine. It is nevertheless dangerous, as a few relapses undermine the constitution by aggravating any lurking mischief in the bowels, and unless the utmost vigilance is exercised, on the first debauch, dysenteric symptoms follow running rapidly to ulceration. From what I have witnessed, I am disposed to conclude that bringing the system under the slight but full influence of mercury, powerfully changed the disposition to febrile relapses. In those dysenteric cases alluded to, general blood-letting has been resorted to, sometimes with great advantage, but usually free topical bleeding is of more marked benefit, with hot fomentations, laxatives to remove noxious secretions, and opiate enemata to relieve irritation, with rigid abstinence. Mercury however I have found to be the safeguard, and in first attacks, I continue its exhibition in three or five grain doses combined with two or four grains of ipecacuan. and $\frac{1}{4}$ or $\frac{1}{2}$ grain of muriate of morphine, every six hours, till the system come under its influence, or

the evacuations become healthy and regular. In subsequent attacks, or in more subacute cases, I have found benefit in large doses of ipecacuan. six grains with muriate of morphine ½ grain, and extract of gentian four grains, and the occasional addition of five grains of blue pill night and morning, with an intermediate laxative, persevered with till the irritability of the bowels has been allayed, and the evacuations have shewn healthy fœces. The two fatal cases of dysentery occurred in individuals whose constitutions had been undermined by previous attacks of fever, and who had yielded to excesses soon after leaving the quiet and regularity of hospital.

In connection with the subject of fever, I may here allude to the marked predisposition shewn to the symptoms of delirium tremens. Although I am inclined to attribute this effect in a great degree to the quality of the spirit prepared, which can rarely be obtained free from adulteration with noxious narcotics to increase its intoxicating power, there can be no doubt this is chiefly owing to the influence of a vertical sun in exhausting the nervous energy. After a debauch in a man of dissipated drunken habits, it requires great circumspection to prevent an attack, in the depression left from the previous excitement, by a modified stimulant and nutritious regimen, and the careful exhibition of opiates to quiet the marked irritability and restore regular sleep. When the symptoms are fairly established, the aberration of mind complete with constant wakefulness and fidgetiness, generally clean tongue, frequent soft pulse, tremors, skin cool, often with copious exudation, eyes slightly bloodshot with a suspicious look, occasionally clear, countenance pale; I have found the exhibition of muriate of morphine in ʒi. doses or upwards of the tincture, or one or two grains of the substance, repeated either alone, or with the addition of ½ grain doses of tartrate of antimony, and two or three grains of calomel, every four or six hours, supporting the strength with light nourishment, and the occasional use of beer, or brandy and water, and counteracting any marked increased determination to the head by cold applications, effectual, after three or four administrations, in inducing sleep and checking the disease; when ordinary general measures are sufficient to restore the tone and health of the system. I have ever found personal restraint injurious, one or two judicious attendants will be always able to anticipate any violence or the like; but the constitution has suffered a severe shock, and long continued care is requisite to confirm the health.

The prevalence of chronic enlargements of the inguinal glands was soon brought under notice, which seems to be connected with some peculiarity of climate. They are developed by a slight strain, hard riding, sores

on the extremities, gonorrhœa and chancres, and some times by no evident cause, or rather some internal constitutional change. Those from chancres or sores on the extremities are most acute, run their course rapidly, and terminate in suppuration, healing very slowly by granulation. Most usually the glands become indurated, enlarged, and only occasionally painful, chiefly at night, and are most intractable; neither subsiding nor reaching complete suppuration. Leeches, hot and cold applications, mild diets, quiet and exercise, mercurial frictions, blisters, pressure, the superficial application of hydrate of potass, iodine and its preparations, mercury, quinine, general attention, have all been resorted to and with doubtful benefit. Loss of health and strength is produced by the confinement, the appetite fails, a low irritative fever is induced, or severe nocturnal pains of the joints and shaft of the long bones, with great loss of power supervene, and the system becomes quite cachectic.

Such cases, together with convalescents from dysentery and fever, and other ill conditioned subjects, although with no formed disease, beyond weakness, pallor, and on occasion of any accidental injury, the health being slowly restored, peculiarly require a change of air to a convalescent station. They are long incapable of duty, or, if returned to it, soon have a relapse of illness which increases the evil. Many young men are thus after a few years of very irregular service lost, who, had they been indulged in a few months leave at some cooling bracing station under judicious care, would have been restored to the service as efficient duty soldiers. The Mahabuleshwar Hills, seem to combine many of the advantages required for invalids, in its reduced temperature and buoyant air, from its great elevation, and in its being within the direct influence of the fresh sea breezes. I am well aware of the trials that have been already made of its effects on diseased European soldiers, and have viewed with regret the unfavorable results reported; but I have ever considered, that in the first trials the very injudicious selection of cases under severe disease requiring active treatment and attention, or of chronic organic disease which nothing short of an entire removal from a tropical climate was at all likely to ameliorate, and even of cases in the last stage of sickness, has led to such a result; for I have seen individual Officers and many soldiers labouring under simple debility from repeated attacks of sickness or constitutional weakness and a great proneness to disease, return after a few months residence on the Hills, in a state that might be fairly termed robust. At present, I can only contemplate with regret the fate of several young soldiers under the unavoidable exposure, in their weakened state, to another hot and wet season.

Before closing this report, I may further add, that, at the end of Sep-

tember 1842, 35 cases remained in hospital, 8 of which only being chronic affections, and recommeneded for discharge from the service; 2 accidents in the field; 2 recruits found to be ineligible for general service; 2 worn out old soldiers, and 2 volunteers, one whose health was undermined by severe service in Persia, and the other in the Affghanistan Campaign.

Article XII.

Observations on the good and bad effects of Calomel in some of the Diseases of India. By J. Murray, Esq.

Presented, February, 1843.

In a former paper, I detailed the results of some experiments which I had instituted on dogs, with the view of ascertaining the physiological effects of calomel on the capillary and secretory functions of the gastro-intestinal mucous membrane. In prosecution of this enquiry, I would now venture to submit a few observations on the therapeutical operation of this medicine in the treatment of some of the diseases of this country.

Before proceeding to the consideration of the application of calomel to the treatment of individual diseases, it may be well to state generally its most important physiological effects. Those which have been most satisfactorily established appear to be the following; of which the first, second, and sixth, are deduced from the experiments formerly detailed, and the others have been generalized from the published records of clinical experience.

1. Calomel excites and increases the secretions from the mucous follicles, and serous exhalants of the intestinal canal; and in large doses it alters these secretions, occasioning a sero-albuminous, sanguineous, or other preternatural effusion on the inner surface of the bowels, as shewn in Exp. II., IV., XV., VI; and still more strikingly in Exp. IX.

2. It increases the flow of bile into the duodenum: and this effect appears to be produced, not simply by emulging the gall bladder and biliary ducts, but also by directly increasing the secretory function of the liver. This seems to be deducible from the fact, that, in all the experiments in which an augmented flow of bile into the deodenum was produced by the calomel, the gall bladder was observed to be distended. No obvious alteration in the appearance of the bile was observed to be produced by the calomel: but it was very generally noticed, that, while the fluids contained in the small intestines were of a yellow or orange colour, the contents of the large bowels were dark coloured.

3. It appears to excite the action of the cutaneous exhalants, and thereby to augment the insensible perspiration.

4. The last, and perhaps the most uniform, of its physiological effects on the secretory organs, is its well known operation as a sialogogue.

5. It exerts an irritant effect on the nervous system generally, and more particularly on the gastro-intestinal nerves: hence its limited efficacy, and frequent injury, in diseases and habits characterized by great nervous irritability or depression.

6. It excites and increases the physiological actions af the arterial capillaries. This effect was strikingly exemplified (in the experiments to which I have referred) by the increased vascularity of the capillary vessels of the gastro-intestinal mucous membrane, accompanied, after large doses, by sanguineous transudation. It is probably by the augmentation and alteration of tonic contractility thus imparted, that its use tends to re-establish the interrupted circulation through these vessels, and thereby to diminish their enlarged diameters and reduce their morbid vascularity, when they are the seat of inflammatory action.

7. It lowers the vital (organizable) properties of the blood, and more particularly diminishes the quantity of its contained fibrine. From this action is presumably derived its special value in those forms and stages of inflammation in which these properties of the blood are morbidly increased, and in which there is a strong tendency to the deposition of coagulable lymph: hence, too, its contra indication in those varieties and stages of disease characterized by an opposite constitution of the blood; and its injurious effect in preventing the adhesive inflammation, which limits the extent, and facilitates the outlet of internal suppuration.

It is probably to a combination of the two effects last specified, that we are most chiefly to ascribe the acknowledged efficacy of calomel as an antiphlogistic remedy: and in proportion as vascular action and the vital properties of the blood exceed, or fall below, the healthy standard, may we expect to derive greater or less benefit from its administration in inflammatory affections.

8. It increases the action of the absorbents. Hence its utility in promoting the absorption of certain morbid inflammatory exudations, whether fluid or more solid, whether effused on the surface or into the texture of organs, and whether the result of acute or chronic action: hence, also, its injurious operation, in many instances, in accelerating and extending ulcerative absorption; and hence, finally, the necessity of suspending its exhibition in all instances in which its use, instead of promoting the re-

moval of the morbid depositions for which it is administered, is found to be only causing interstitial absorption of the healthy tissues and consequent emaciation.

9. In addition to the more defined effects abovementioned, its continued use, in small doses, is supposed, on apparently just, but less obvious, grounds, to have the effect of arresting certain kinds of morbid action, and of morbid alteration or degeneration of structure, unaccompanied by inflammatory action. But more accurate and extended experience is still required to enable us to distinguish the forms of disease here alluded to, in which it is said to be useful, from those varieties (malignant or otherwise) in which it is found to be positively injurious.

1. *Dysentery.*—There is no point in practical medicine upon which a greater diversity of opinion has prevailed than regarding the utility, or otherwise, of administering calomel in dysentery. Such discrepancies would admit of some explanation, were they found to exist between medical men who had acquired their experience in different climates, or among different classes of subjects, as for instance, between the practitioner in the moist, low, maritime climate of Bombay, and one on the dry, elevated, inland plains of the Deccan; or between those who had been in medical charge of Regiments composed principally of young recruits or of soldiers who had never before suffered from dysentery, and others whose clinical experience consisted of men long exposed to a tropical climate or suffering from relapses of the disease. But when we find the most opposite conclusions deduced by men of equal powers of observation who have practised, or witnessed the practice, in the same Hospital, or who have perused the same recorded statements, we are utterly at a loss to explain or reconcile their differences.*

Amid such conflicting evidence, the inexperienced practitioner looks in vain for any fixed principle to regulate his practice. And hence his use or disuse of the remedy in after years depends, in many instances, on the fortuitous results of his first trials of it. Thus those who happen to have prescribed it in cases favourable for its administration, have too often ex-

* The three practical writers of highest authority in this country, hold different opinions on this most important point. Dr. Johnson recommends frequently repeated doses of calomel, and the speedy induction of salivation.—Mr. Annesly advocates large doses of the same medicine at longer intervals, with the daily use of purgatives, and the avoidance of salivation; while Mr. Twining asserts, that either of these plans, if generaliy adopted in Bengal, would very frequently destroy life.

tolled it as (after depletion) the one thing needful; while others, who have used it under circumstances unfavourable to the development of its good effects, have too frequently lost confidence in its virtue, and been thereby deterred from its subsequent employment.

The administration of calomel in dysentery must have reference conjointly to the local or anatomical, and to the constitutional, characters of the individual case submitted for treatment. Among the varying forms and types which the disease assumes, we find that in every case there is either a morbid inflammatory action which requires to be arrested — to be re-absorbed, or a morbid structural lesion to be repaired. But these local affections (whether separate or combined) may be accompanied by indications of an increase of vascular action and plethora, as in persons of a phlogistic habit, or by a diminution of vascular action and power, and a lowered condition of the blood, as in persons of feeble, relaxed, constitution; or by a special morbid diathesis, as the tubercular, scrofulous, scorbutic, or cachectic.

Keeping in view these morbid conditions, local and constitutional, in connection with the physiological effects of calomel previously specified, and with recorded experience, we may perhaps discover some general principles, which, though not of universal application, may nevertheless be found safe and useful guides for the regulation of our practice.

1. Calomel is particularly indicated in the incipient stage of acute dysentery, in which the local affection is characterized by inflammatory vascularity, and sanguineous extravasation, with an increased and morbid secretion from the mucous surface of the bowels, without the co-existence of the local effects or terminations of a more advanced stage.

To ensure its success, however, or rather to prevent its being positively prejudicial, it is of indispensable importance that its use should be preceded by adequate vascular depletion. When the patient is strong, or of sanguine temperament and a plethoric habit, the presence of febrile action will not fail to point out the appropriate remedy; but, even in the absence of general vascular excitement, the reduction of capillary action and plethora by free (and, if necessary, repeated) leeching, either over the abdomen or to the anus according to the seat of disease, forms the first and most important element of any mode of treatment, but in an especial degree of the treatment by calomel.

After suitable depletion there will remain a state of local capillary distention, with partially obstructed capillary circulation, and tendency to sero-albuminous or fibrinous deposit, and it is precisely at this stage, that the good effects of calomel are pre-eminently displayed. By its peculiar

effect on the blood and on the action of the capillaries, before referred to, it tends to arrest the morbid action and re-establish the healthy circulation through these vessels; and by increasing the abdominal secretions, to relieve their morbid vascularity. In this latter effect its beneficial agency is aided by castor oil or other mild aperient; while its injurious action on the nervous and muscular tissues should be counteracted, and the morbid irritability of these textures should be subdued, by combining it with a full dose of opium.

2. Calomel is also beneficial at a later stage of the disease; the stage of inflammatory effusion (whether serous, albuminous, or fibrinous) with consequent thickening or softening of the mucous or sub-mucous tissue of the bowels, and morbid adhesions of portions of the intestine to each other, or to contiguous viscera. Its good effects at this stage might have been inferred both from the physiological effects of the medicine on the secretory, capillary, and absorbent vessels, and from its experienced properties in analogous diseases of other organs better fitted to display its action. The great difficulty is to form the diagnosis. In this we shall derive quite as much assistance from an accurate knowledge of the patient's constitution before his illness and of the mode in which it is affected by the disease, as from careful attention to the local symptoms: and the more urgent may have been the necessity for bleeding at the commencement of the attack, so much the safer and more beneficial will be the subsequent administration of calomel.

3. The presence of abdominal venous plethora, either general or partial, during any of the stages of dysentery that have been referred to in the preceding observations, will generally indicate the necessity or utility of the occasional use of calomel. Whenever, therefore, there are general abdominal fulness and heat, with a furred tongue, or a sense of fulness and aching over the sacrum, weight about the lower part of the rectum which is relieved by resting on a pillow, or a sense of fulness and uneasiness in the right hypochondre or the epigastre, with scanty secretion of high coloured urine, we shall find that the classes of symptoms now described are almost invariably relieved (after suitable depletion) by a full dose of calomel and opium, followed by an aperient, and repeated according to the circumstances.

4. When the stage of inflammatory disorganization has arrived, (whether ulcerative, suppurative, or sloughing), calomel must always be considered to be of doubtful efficacy, and in the great majority of instances may be expected to be positively prejudicial.

If it be considered that intestinal ulceration is generally met with either

at a late stage of a first attack of dysentery, or (as more frequently happens) at an earlier period of some subsequent relapse; that the local morbid process is pre-eminently one of morbid action without power; and that the organizable properties of the blood are lowered; and if it be further borne in mind that the subjects of ulceration are generally of weak or scrofulous constitution, and that in many of them there is a mixture of nervous irritability and vital depression which is singularly inimical under any circumstances to the favourable operation of calomel, we shall have some difficulty in fixing upon any of the physiological or therapeutical properties of that medicine from which we shall be warranted in anticipating a beneficial influence from its administration. On the other hand, theory would lead us to apprehend that in very many cases it would prevent (what we are generally anxious to induce) the exudation and organization of lymph on the surface of the ulcers; and that it would accelerate (what we are anxious to arrest) the extension of the ulcerative absorption. And we find, in point of fact, that a persistence in its use not only aggravates the local symptoms (producing irritation, extension, or sloughing of the ulcers,) but in many instances induces an irritative febrile action, with great vital prostration, and eventually permanent impairment of the constitution: while in less favourable cases, and particularly in persons of scrofulous diathesis, it too often produces either rapid destruction of the intestinal tissues or suppuration of the substance of the liver.

The use of calomel when administered under the circumstances just specified, is usually justified on the principle that in dysentery there is a specific morbid action, which mercury has a specific power in controlling. In accordance with this opinion its use is diligently persevered in until the system is brought under its influence, without reference to its intermediate effects on the bowels or constitution, or I ought rather to say, the non-improvement or aggravation of the symptoms is considered to indicate the necessity for a more speedy induction of the constitutional effects of the medicine.

But even the admission (which, with our present knowledge, I should consider a dangerous admission,) of the specific doctrine both of the disease and of the remedy, would scarcely justify the treatment now referred to, even in the management of syphilis, for the cure of which, beyond all other diseases, mercury may be considered to be pre-eminently a specific, when occurring in feeble irritable constitutions, similar to those which are the usual subjects of ulcerated bowels, the use of this medicine requires constant watching, and is invariably suspended, when the ulcers assume an irritable, phagedenic, or sloughing appearance, particularly if accompa-

nied by hectic symptoms and great prostration. How much more imperative, then, ought to be the abandonment of this remedy in dysenteric ulceration, when the local disease appears to make progress, and the constitution is evidently giving way, under its influence.

Having considered the indications for the use or disuse of calomel furnished by the anatomical signs and local symptoms of dysentery, it remains to notice those derived from its constitutional characters. And it may be safely affirmed, that it is upon the careful and anxious adaptation of the remedy, not less to the abstract disease than to the patient who is the subject of it, upon our personal knowledge of his constitution, the character of his former illnesses, and the effect of remedies upon them, in short upon that individual (not numerical) experience, which was in former times so much valued both by patient and practitioner, that the success of our treatment will very materially depend.

1. If the constitution be healthy and robust, or if there be excess of vascular action; and if the patient be of recent arrival in the country, and has had no previous attacks of the disease, we may in general anticipate benefit from the occasional administration of calomel. It is not alone that such constitutions are more favourably affected by the medicine, though this is by no means unimportant, but it is also, and more especially, because the disease in such patients is generally attended with that condition of the blood, and, if not early arrested, is most likely to produce those local effects, which calomel is so peculiarly calculated to remove. It is of indispensable importance however, that its first exhibition should be preceded by the required vascular depletion. This, I am aware, is the general practice. But I do not here allude simply to the efficacy of depletion as an antiphlogistic remedy; but also to its value as an essential preliminary to the safe and successful use of calomel. For cases may arise in which it may be supposed by those who advocate the direct sedative action of this remedy that no injury can result (further than that arising from loss of time) from administering one or two doses until the precise nature and extent of the disease shall be more fully developed: whereas, if its stimulant as well as alterative operation on the capillary vessels be admitted, it follows that every dose that is exhibited before vascular action is adequately reduced by depletion, must necessarily aggravate, instead of relieving, the disease, and increase its tendency to terminate in ulceration or suppuration.

2. If the patient, on the other hand, be of a naturally feeble, and relaxed habit, or if the vascular system has been much lowered from protracted residence in the country or from pre-existing disease, we have a

state of constitution unfavourable to the beneficial action of calomel, but not directly contra-indicating it, while the local affection may be of that character which this remedy is well fitted to correct and remove. To such cases no general rules can apply : each individual's case must be judged and studied by itself. It must be used with great caution, regard being had to the possibility of converting a state of local phlogosis, with or without morbid effusion, into disease of an ulcerative type: and when we are in doubt as to its propriety, we shall do well to prescribe a milder preparation of mercury.

3. When, in addition to constitutional debility, there are indications of a tubercular, cachectic, or other special morbid diathesis, and if it be a case of relapse, and the previous attack has been treated by mercurials, (one of the inconveniencies of which is the pre-disposition which it gives to such relapses,) under such circumstances we have a modification of disease, in which the use of mercury as a general rule, is distinctly contra-indicated, both from constitutional and local causes. The morbid states of constitution here referred to, it is well known, frequently originate in the use of mercury, and are in general injuriously affected by that medicine under any circumstances : while the local dysenteric disease, in such subjects, is usually modified in its characters, affects principally the mucous glands and follicles, and shews a strong tendency to terminate in a low intractable form of ulceration, which calomel may be expected to accelerate and aggravate.

In this form of the disease (usually characterized by wasting of flesh, muscular weakness, and nervous irritability or exhaustion, with the addition frequently of hectic symptoms) in which the use of calomel is so generally hazardous, Ipecacuan as is well known, affords a valuable resource, no less than in the more phlogistic types, after the further use of the former remedy has become unnecessary or inadmissible. And some experiments, which I have recently taken occasion to make with this medicine, seem to shew, that its physiological action on the capillary and secretory vessels of the intestinal mucous membrane is analogous, though inferior in power, to that of calomel ; and that it ought, therefore, to be administered on a similar principle, that is, in full doses (so as to direct its action to the intestinal capillaries instead of the cutaneous exhalants) combined with full doses of opium, repeated at considerable intervals, and alternated with aperients.

But even in this atonic form of dysentery, symptoms may occur, (as

the absence of feculence in the discharges*) for which two or three doses of calomel, combined with opium and camphor, may be given with safety and benefit. As this remedy, however, is in such cases, administered, not in the vain hope of curing the disease by it, but for the purpose of fulfilling a special indication, its use ought not to be persevered in, if it fail in accomplishing the desired object. When we find, on visiting our patient after a dose of calomel, that he has passed a more quiet night, and that there has been adiminished frequency and increased feculence of the evacuations, even though a great deal of faintness and prostration (as some times happens) may have attended its operation, we shall be encouraged to repeat it, provided there be a clear indication for so doing, taking care to administer due nourishment, and even stimulants if necessary, during its operation. But on the other hand, where the morbid character and frequency of the evacuations increase rather than diminish, with a red brown tongue, a retracted abdomen, and an irritative action of the heart and arteries; and particularly when, in addition, the patient *feels* that the medicine is doing him harm rather than good, under such circumstances its discontinuance cannot be too imperatively urged.

The two sets of cases now referred to; opposed as they are to each other in their constitutional characters, may present analogous anatomical characters: but they nevertheless constitute two widely different diseases for all the purposes of medical practice. Hence the indispensible necessity of making each case the subject of distinct study. And above all is it important to bear in mind (what is too often lost slight of) that the use of calomel in dysentery is generally, if not invariably, productive either of positive benefit or of positive injury; that we can never be assured of its precise effect in any instance until it has been tried; and that it is there-

* The nature of the morbid action by which the yellow feculent matter so frequently found in the small intestines in dysentery, suddenly and entirely loses its feculent character, and is converted into a dark brown watery fluid or other morbid product, on passing into the colon and rectum, has not hitherto been explained, nor has the phenomenon itself been sufficiently dwelt upon by practical writers. And yet it is one of great practical importance. It shews that the entire absence of feculence in the discharges may arise, neither from the suppression of the biliary and other secretions into the small bowels, nor from the retention of fæces in the upper part of the canal; and it further shews that the feculent evacuations which follow the administration of one or two full doses of calomel are not always to be ascribed to a restoration of the biliary secretions produced by that medicine, but may be the result of its operation on the morbid capillary action of the large intestines, whereby the healthy feculence passes through them unchanged. And the same effect is frequently produced by full doses of Ipecacuan.

fore incumbent upon us carefully, to observed the result of its first trials, and to be guided thereby in regard to its subsequent repetition.

I conclude this part of the subject with a brief allusion to the most eligible mode of administering calomel in dysentery. In the first stage, our object being to increase the abdominal secretions and to produce a direct antiphlogistic effect on the affected capillaries, it ought to be given in full doses (about ten grains) and at considerable intervals, combined with two or three grains of opium. Notwithstanding the diversity of medical opinion which has at different times prevailed regarding the use of opium in dysentery, it is now very generally admitted to be a valuable auxiliary remedy, when conjoined with such medicines as act on the capillary or the secretory functions of the bowels. Its conjunction with calomel is peculiary required, both to counteract the local and constitutional irritating action of that medicine, and also to subdue the morbid irritability of the nervous, muscular, and capillary tissues of the bowels, which constitutes an important element of the disease. The exhibition of calomel ought also to be alternated with frequent and moderate doses of mild aperients (as castor oil in mucilage of gum arabic), not simply to remove feculent accumulation (which rarely exists), but also and more especially to aid its operation in restoring the normal secretions from the mucous surface of the bowels, and thereby to promote the resolution of the disease.

When prescribed at a later stage our object will be rather to obtain its alterative effect both on the secretions and the capillary circulation ; and probably a preference will then be given to the form of blue pill given in smaller doses and at shorter intervals, and combined with a smaller proportion of opium. Its action will now be materially promoted by combining it with Ipecacuan and taraxacum, and in the atonic form of the disease, with camphor and quinine.

Article XIII.

Annual Report of the 25th Regiment, N. I. for the year 1841.*

By A. Wright, Esq.

Presented by the Medical Board, June, 1842.

General Observations.—In reporting on the state of health of the 25th Regiment N. I. it will not I trust be out of place to mention the service in which the corps has been employed during the past year.

On my joining the corps in the beginning of March, it was stationed at Kotra in Cutch Gundava; on the 29th we left, proceeding along the base of the Hala mountains, and after a fatiguing march, we arrived at Dadur on the 6th April; distance 72 miles. Halted one day, and on the 8th accompanied by the wing of H. M. 41ts Regiment, 1st Troop Horse Brigade, 3rd Company, 1st Battalion of Foot Artillery, we marched on route

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* *Stationed at Quetta.*

Strength	1062	
Included in the returns	909	Dec. 31, 1841.
Absent on command, beyond the division or on leave	153	
Total	1062	

Number of Sick.

Remained 31st December 1840	71
Admitted	1769
Discharged	1775
Died in Hospital	28
Remaining 31st December 1841	37
Average daily number of sick for the year	6
Average number of convalescents	None
Died without receiving medical treatment	..
Changes since 31st December 1840	..
Recruits joined 1st January to the 31st December 1841	93
Discharged from the service on account of disease	3
Discharged from the service on account of other causes	5
Invalided	10
Pensioned	26

to Quetta via the Bolan Pass. On arriving at Seriab we were ordered to proceed to Moostung, where we arrived on the 19th; the Regiment remained here until the 15th of June, when we left for Kelat, where we arrived on the 20th. We were at Kelat until the 1st October, when we marched on route for Dadur via the Bolan Pass, halted for fourteen days at Moostung, and arrived a Dadur on the 30th; here we remained until the 20th December when we were ordered to proceed to Quetta, where we arrived on the 26th.

The whole of the countries, traversed on this route from Kotra to Kelat, agreed in their aridity and desert aspect; as also in the nature of their soil, which is a deep, rich alluvial mud, inclosed in valleys between abrupt, high, barren, mountains; but their elevation above the level of the sea, varies very materially; Cutch Gundava is quite a low country, whereas the valleys of Moostung and Kelat above the Bolan Pass, have an elevation upwards of six thousand feet. In consequence the temperature varied very much; at Kotra and Dadur, the days were very hot,—the thermomenter rising to 100 in tents; in the Pass it suddenly became cold, the nights were raw and chilly, and on two occasions snow fell; the weather remained cold and wet, until the middle of May. At Kelat in June, July, and August, the days were very hot, although the nights remained pleasant. In September it suddenly became cold, more especially in the mornings, and towards the end of the month it was freezing. In October the days were pleasant, but the nights very cold, above the Pass; but at Dadur the heat was still great during the day.

With the exception of the months of July, August, and part of September, both Officers and men have been exposed to all the varieties of climate in tents; during the above mentioned months whilst stationed at Kelat, we occupied houses in the fortress.

From the varieties of climate, and arduous duties in which the Regiment has been employed, it would be difficult to award to any one set of causes its due share in the deterioration of the health of the Regiment.

Prevailing Diseases.—Bowel complaints and fever of various types have formed the bulk of the cases that have been admitted into the hospital of the Regiment during the past year.

Fevers. The fever most frequent in this country is an intermittent, one chiefly quotidian, a few tertian, and still fewer approaching the form of remittent; in general unaccompanied with any particular visceral derangement. In July and August, whilst at Kelat, a few cases were complicated with diarrhœa and congestion in the brain, and most all of them with

jaundice; an emetic on admission followed by a dose or two of calomel and pulvis antimon. or antimon. tart. with saline mixture and afterwards purgatives, are what I usually prescribe until the skin becomes cool. The quinine is then given or pulv. cinchonæ, and the disease is generally subdued in the course of a few days ; in a few cases where the quinine in very large doses has failed to stop the disease, I have found, combining it with sulph. zinci hase the desired effect. I have very seldom had occasion to bleed; unless when there is determination to the brain, in sepoys I always prefer topical to general bleeding unless the symptoms are very urgent. Where the tongue remains brown and dry with symptoms of congestion in the brain, I give calomel with pulvis antimon. and introduce mercury into the system by friction, until the gums become tender, at the same time giving an occasional dose of extract. colocynth. at bed time.

Total number of fevers admitted during the year is nine hundred and sixty nine ; of which seventeen have died.

Hepatitis.—No case of this disease has occurred during the year.

Dysentery.—This has been a common disease amongst the sepoys, and several cases have proved very obstinate; the treatment I have generally pursued is, on admission to prescribe a full dose of calomel and opium, following it up with a dose of castor oil. I then give the dysentery pills of pulvis Ipecac. pil. hydrarg. and opium or pulvis Ipecac. extract gentian and extract hyoscyami with a dose of castor oil, every alternate morning. Should there be much tenesmus, with bloody stools and tenderness in the abdomen, I apply leeches and blisters ; if the disease does not yield to this treatment, I give calomel at night, and introduce mercury into the system by friction, and when the evacuations have become natural, begin with astringents and tonics. The sequelæ of the disease are often more obstinate and unmanageable than the disease itself, and the patient too often relapses, and after long lingering dies from absolute debility. The total number of cases of dysentery and diarrhœa during the year has been one hundred and thirty-nine; of which, eight have terminated fatally.

Rheumatism.—This has been a common disease, but unless in one or two cases, I have always found it very manageable. In the acute form I give diaphoretics, pulvis Ipecacuan. comp. vin colchici, &c. : in chronic cases I have found the hydriodate of potass an invaluable remedy in either curing or at least very much relieving the disease.

Cholera.—I am happy to state that no instance of this disease has occurred in the Regiment.

Surgical cases.—In field service it may be expected that something may have occurred worthy of notice amongst the surgical cases, but such is not the case. On my arrival at Kotra I found a number of ecthymatous ulcers, and they have continued to prevail more or less during the year: they are much more common in Cutch Gundava than in this country; they appear chiefly on the lower extremities and hands, though no part of the body is exempt.

The treatment I have found most successful is to destroy the diseased structure with lunar caustic; afterwards applying a poultice for a few days, until the sore puts on a healthy appearance; I then apply straps of adhesive plaster with a bandage, giving the patient an occasional dose of an aperient; they in general readily heal up by this treatment. I have found change of air have a good effect, when other means had failed.

Camp; Quetta, 13th January, 1842.

Article XIV.

Annual Report of the Civil Surgeon of Ahmedabad for the year 1841.* By S. Sproule, Esq.

Presented by the Medical Board. May, 1842.

The *Jail* at this station has been healthy during the year. No epidemic has appeared amongst the prisoners who have suffered merely from those diseases incidental to the season and to which natives under any circumstances are liable. The constitutions of many of the prisoners

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*Average daily number of prisoners in the Jail	745
Police of the city	288
Sebundies	52
Prisoners at Sadra	40
Military detachment at Sadra	66
Guzerat Koolie Police corps	590

Number of sick in the Jail.

Remained on 31st December 1840	28
Admitted in 1841	623
Discharged	602
Died	31
Remaining on 31st December 1841	18

Number of sick in the Civil and Insane Hospital.

Remained on 31st December 1840	55
Admitted in 1841	308
Discharged	294
Died	10
Remained on 31st December, 1841	59

Number of Sick in the Guzerat Koolie Police Corps.

Remained on 31st December 1840	18
Admitted in 1841	418
Discharged	416
Died	2
Remaining on 31st December 1841	18

Number of sick in the Political Department at Sadra.

Remained on 31st December 1840	3
Admitted in 1841	222

have suffered from the effects of opium to the use of which they had become habituated, and some affirm that previous to their coming into jail, ℥i. to ii. has been their usual daily allowance. It would not be altogether safe to deprive such persons suddenly of the drug, but even although the quantity may be gradually reduced and never entirely taken away from them, still the constitution suffers so gradually and imperceptibly as to render the result of disease, however slight, very uncertain. Such patients do not recover or regain their strength as speedily as one would suppose, as even a slight attack of fever or bowel complaint renders them invalids for weeks. This however is more particularly applicable to those men who returned here from the Tanna Subsidiary Jail, all of whom succumb very much to disease however slight. The tone of their constitutions is very much lowered, and it was amongst these men, the old and infirm, and men whose constitutions were worn out either by the effects of opium or other causes previous to their coming to the Jail, that the mortality has taken place during the year. But in almost all the cases I have witnessed, death seemed to be more attributable to the infirmity and constitutional debility previously existing, than to the effects of the disease which the patient laboured under previous to his death, as the symptoms were severe, a slight fever or bowel complaint carrying off the patient in a few days after admission. The accompanying cases No. 1 and 2, afford examples. One man died from effusion into the chest occurring during remittent fever, and another died of cholera which occurred during convalescence, from dysentery. He died after twelve hours from the first appearance of the disease, and resolutely refused to take any medicine whatever: he would not swallow it when put into his mouth.

During the last rains, I have observed a great tendency to sloughing of the cornea in men of worn out constitutions and feeble habit of body. It

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Discharged	216
Died	3
Remaining on 31st December 1841	8

Average daily number of sick.

In the Jail	24
In the Civil and Insane Hospital	56
In the Guzerat Koolie Police Corps	15
In the Political Department at Sadra	8
Average number of convalescents	None
Died without receiving medical aid	None

General Observation.

Prevailing diseases.

Remittent and Intermittent Fever and Bowel Complaints.

was certainly not the result of inflammation as it was not till the third or fourth day after, that a subacute inflammation came on, followed by serous deposit under the conjunctiva. Four cases of this description occurred; three of the men had been at Tanna; two were in hospital; one came in with slight fever, the other with slight dysentery; both were convalescent and in the evening their eyes were quite well; next morning however matter was formed betwext the laminæ of the cornea which sloughed until the humours were discharged. Both these men died in four or five days after, exhibiting no other symptoms than extreme emaciation and debility. The other two men were not labouring under any other disease; they went into their cell quite well without any feeling of uneasiness about the eyes, but in the morning the corneæ of both eyes were in a sloughy state; there was no pain or irritation attending this state of the cornea, and these were only slight even on the third or fourth day, when a kind of subacute inflammation made its appearance, followed by serous deposit under the conjunctiva. The treatment consisted in the application of nitras argenti to the slough with a view to cause its separation and induce healthy action, constant counter irritation on the temples and nape of the neck, together with quinine and other tonic remedies, with a more generous diet than the man had been accustomed to. When serous infiltration had taken place, scarifications from the circumference towards the centre of the eye-ball were had recourse to, followed by fomentations. As soon as the appetite was improved, meat diet was allowed them; one of these men had formerly lost one eye under similar circumstances. Ulcers of the cornea also required constitutional treatment similar to the above, before they could be induced to fill up.

The greatest number of deaths occurred in the last five months of the year; during this period, dysentery, diarrhœa, and fevers, were prevalent amongst the prisoners, and the old, infirm and debilitated subject was carried off by a slight attack of either one or other.

Remittent fever was the only disease of a severe character which appeared amongst the prisoners; intermittents were not generally severe, but the patient did not get rid of the fever speedily, and he was usually left in a debilitated state. In my treatment of remittent fever, I have used the tartar emetic solution with great advantage, giving small doses of calomel and antimonials at bed time, followed by a purgative in the morning, the patient being kept under the influence of the tartar emetic during the day. In two or three days there is generally complete remission of the fever, when quinine is given to ward off an attack; in a few days more the type of the fever either becomes changed to that of the intermittent, or the patient remains

entirely free from it. The cure is completed by substituting for the quinine, bark or some tonic bitter infusion with a mineral acid and a more generous diet. I have experienced very good effects from the administration of tartar emetic in the remittent fever of natives, and have used it extensively in the different hospitals and departments during last season. It may cause vomiting once or twice, but this may be considered more beneficial than otherwise, and I have only seen two cases during the season (one in the Jail Hospital and one in the Hospital of the Koolie Police Corps) where I was obliged to discontinue it on account of the vomiting and purging which were always induced by its administration. Local affections are of course to be met by the local abstraction of blood and application of blisters, general bleeding I have not been obliged to have recourse to in any case, and of all classes of patients it is the least applicable to prisoners. I may here mention that in severe cases, I do not wait for the complete restoration of the natural alvine evacuations and a clean tongue for the administration of quinine, but whenever a complete remission of the fever takes place, I give it with the view of warding off or lessening the subsequent attack and making a break in the disease. In no case have I had cause to regret this practice. The intermittents presented nothing peculiar. Dysentery was not in general formidable, occurring in a patient with a tolerable constitution, and it was only that class of men already mentioned to whom it proved fatal ; and they did not seem to die from the effects of the disease but from pre-existing constitutional causes. The same is applicable to diarrhœa. The mortality has been rather less than during the previous year.

The system of dieting seems to work well, and all the prisoners have had warm clothing served out to them at the commencement of the cold weather. 651 cases have been treated during the year, and 31 deaths have occurred being a little more than $4\frac{3}{4}$ per cent on the cases treated, and above 4 per cent on the average strength of prisoners. The mortality has been greater in proportion amongst those men who have returned from Tanna, than amongst the other prisoners. The following statement refers exclusively to them.

Remaining in Jail on 1st January, 1841.	Discharged from Jail during the year,	Remaining in Jail on 1st January 1842.	Died during the year.	Admitted into Hospital during the year.
168	55	101	12	134

Thus the mortality amongst these men has been 9 per-cent on the ad-

missions, whilst it has been less than $3\frac{1}{2}$ per cent on the admissions amongst the other prisoners in the Jail.

In the Civil Hospital some few operations have been performed since I have had charge. I have operated on four cataracts and amputated one penis, in all cases with complete success and relief to the sufferers; various other minor operations have also been performed. Four cases of attempted poisoning have been brought to the Hospital, three from opium and one from datura stramonium; in all the stomach pump was applied with complete success and the patients eventually recovered. Some bad accidents have also been admitted into the Hospital during the year.

The Dispensary practice continues to be considerable during August, September, and October; the number of inhabitants who applied for and received relief has been great.

In the Political Department at Sadra and in the Hospital of the Koolie Police Corps nothing particular has occurred; intermittent and remittent fever and bowel complaints have been the prevailing diseases.

This has been a healthy season altogether throughout this province with the exception of the Dholka Pergunna, where fever was very prevalent, during October and November, and some few cases proved fatal. I sent at different times supplies of medicine for the use of the inhabitants on the requisition of the Collector. The inhabitants of this, I am informed, suffer more at that season than those of any other Pergunna under the Collectorate. In this city fevers and bowel complaints were prevalent during and after the rains, but in no very inordinate degree.

Article XV.

Contributions to Vegetable Embryology, from observations on the origin and developement of the Embryo in Tropæolum Majus. By Herbert Giraud, M. D. Edin. F. B. S. E. Ext. Mem. Med. Soc. Edin. &c. &c.

The rapid and unprecedented advances in discovery, which have marked the progress of human and comparative physiology during the last ten years, are in no department more remarkable than in that which relates to the production and developement of organized tissues; whether of the same, or of new and distinct organisms. In this field more than in any other, the labours of physiologists have been richly rewarded.

The researches of Baer,* Valentin,† Purkinje,‡ Krause,§ and Wagner,‖ on the continent, together with those of Allen Thomson,** T. Warton Jones,†† and the more recent observations of Dr. Martin Barry,‡‡ though many of their results differ in points of minor importance, have yet combined to render the history of animal embryology clear and consistent: so that we can now speak, with tolerable certainty, of the formation and mode of origin of the *germinal vesicle* and the *ovisac*, of the nature of the *Graafian vesicle*, and of the *true chorion*: of the relations of the *corpus lutium*: and of the precise period of the origin of the *embryo*, with the changes it undergoes during the progress of its developement. Much has also been done towards elucidating the manner of the production and growth of the tissues; and the almost contemporaneous discove-

* Baer, Lettre sur la formation del' Æuf. translated by Breschet. Paris, 1839.

† Valentin Handhuch der Entwickelungsge Schichte des Menschen, &c. Berlin, 1835.

‡ Purkinje. Encyelopädisches Wörterbuch, Band X. Berlin, 1834.

§ Krause, Müller's Archiv. 1837.

‖ Wagner, Lehrbuch der Vergleichenden Anatomie. Leipsig, 1834—5.

** Allen Thomson, Art. Generation in Todd's Cyclopædia of Anatomy and Physiology.

†† T. Warton Jones, Lond. and Edn. Phil. Magaz. September, 1835.

‡‡ Martin Barry, Philosoph. Trans. 1838-39-40 and 41.

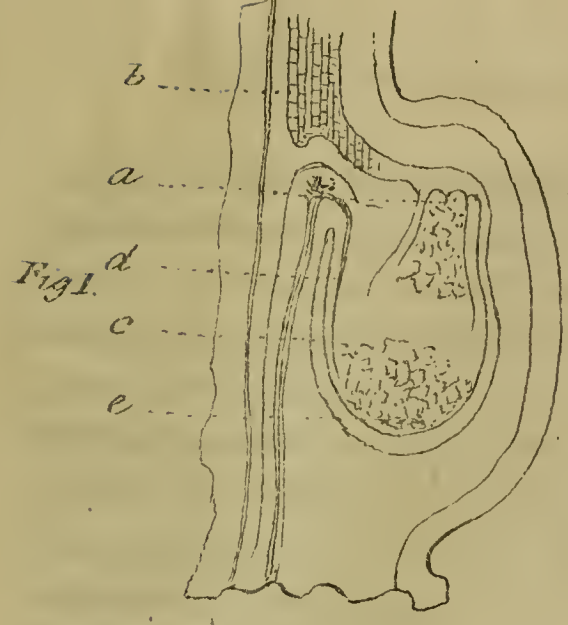
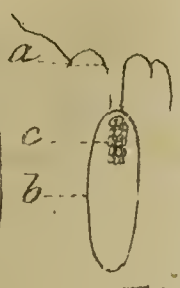


Fig I.



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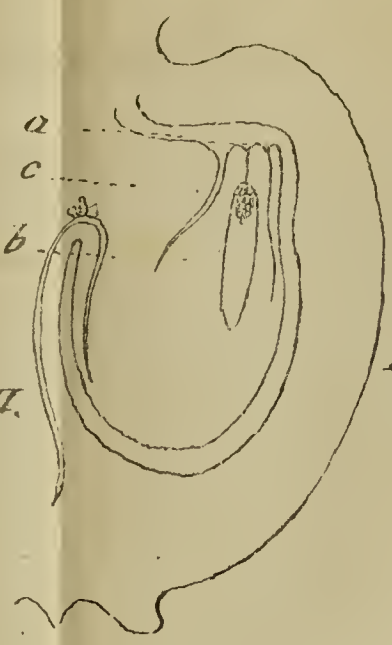

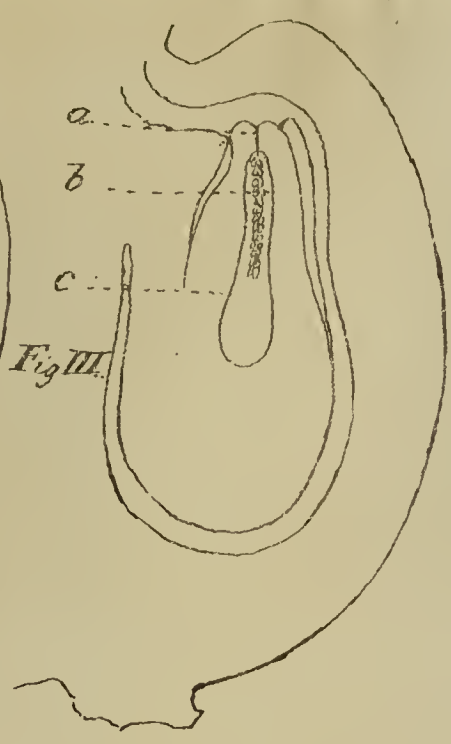

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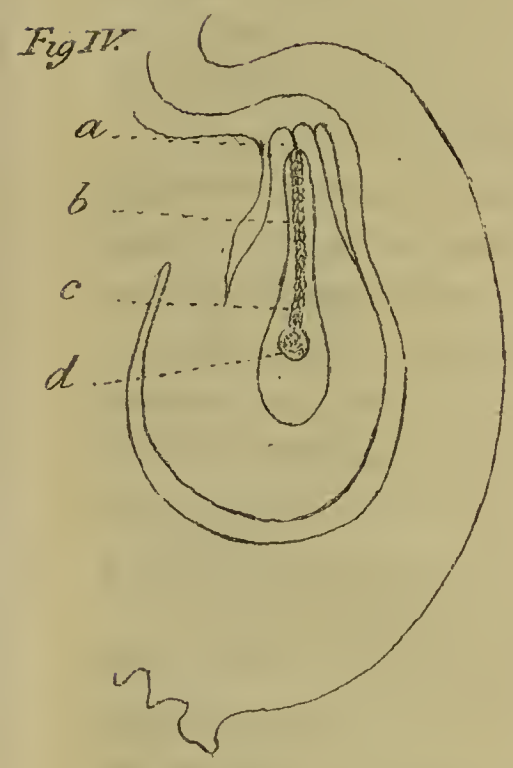

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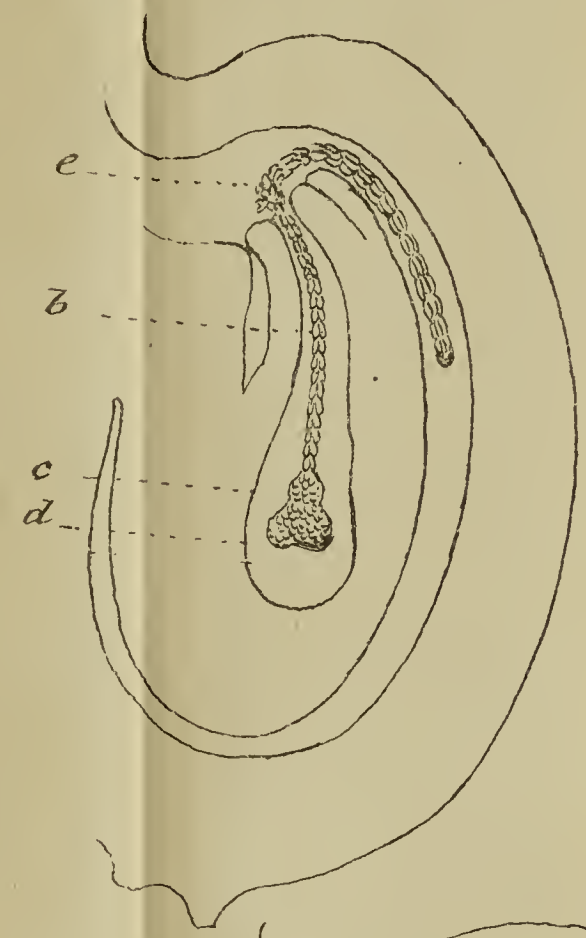
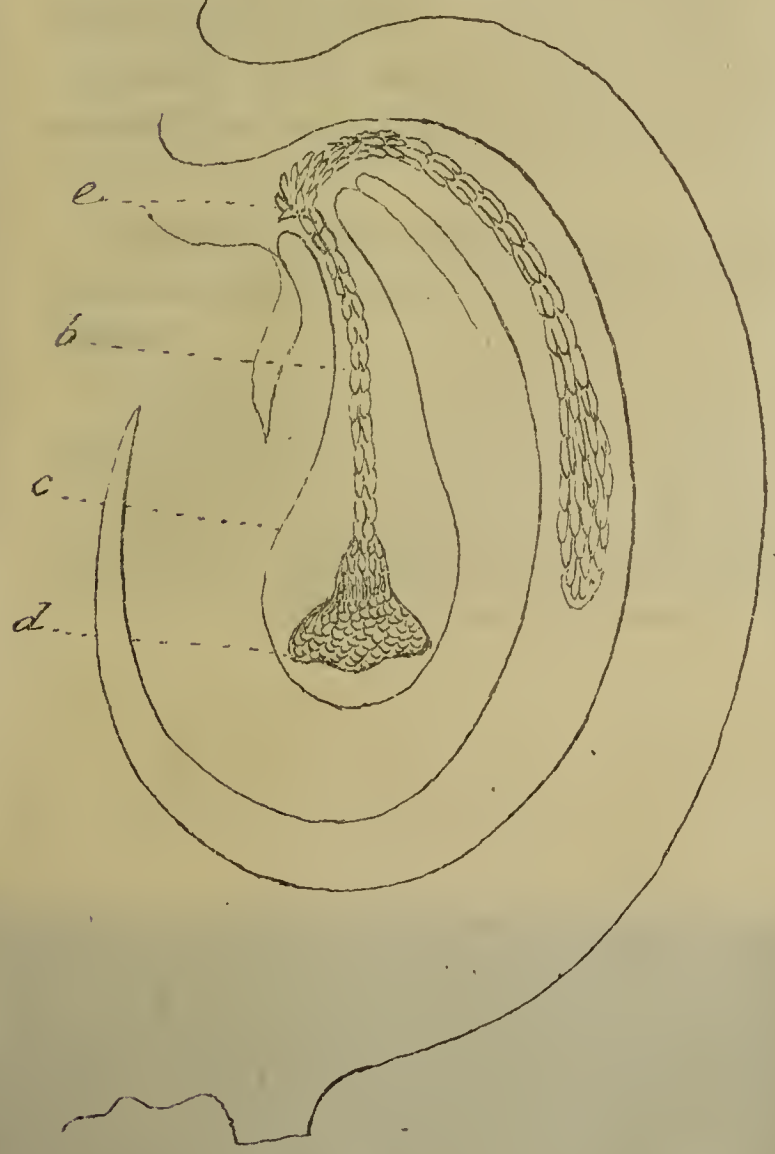


Fig V.

Fig VI.



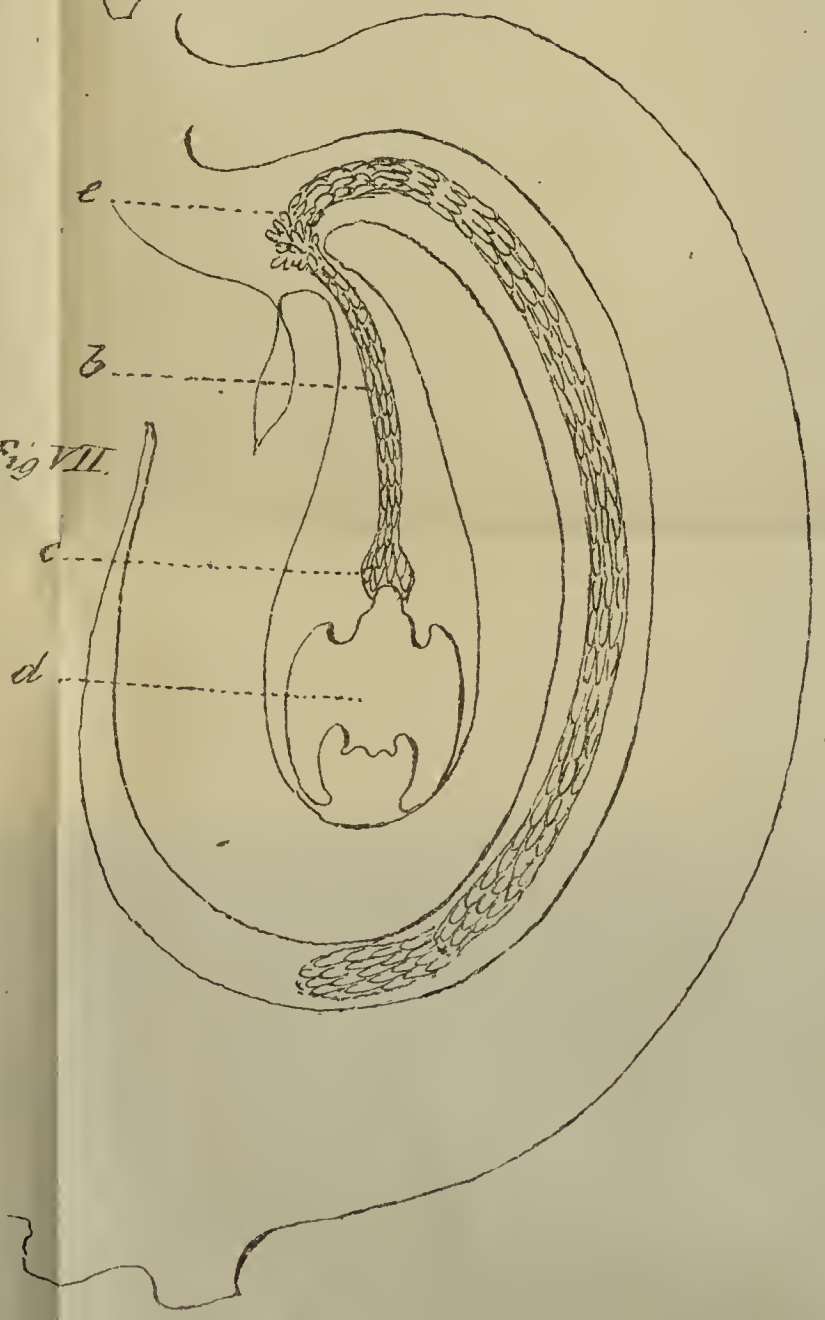


Fig VII.

ries of Schwann * and Schleiden † have shewn how intimate is the correspondence between the structure and growth of animals and plants ; and that in the developement of tissues the same phenomena are exhibited in both. In the vegetable kingdom the discoveries of Amici, Brown, and Brongniart, and the still more recent ones of Schleiden, Mirbel, Spach ‡ and Meyen, have disclosed a series of phenomena that were never contemplated in the days of Kælrenter, Gærtuer and Linnæus. But, whether from errors in observation, or from illegitimate deductions, the conclusions of these several phytologists have been so little accordant with each other, that the true theory of Phænogamic embryology is far from being clearly determined; for while, on the one hand Brongniart, Mirbel, Spach and Meyen, maintain the old view that the *embryo* is primarily developed in the substance of the *ovule* ; Schleiden and Wydler, on the other, regard it as a body foreign to the *ovule* and taking its origin in the *anther cell.*

According to Schleiden :—" at a very early period of the developement of the ovule, a cellule from the interior of the *nucleus*, which originally differed not from the surrounding ones, is developed to an extraordinary degree and presses more and more on the surrounding tissue of the nucleus, which is then absorbed from within outwards. This cellule is the *embryo-sac* (membrana amnii. Malpighi, sac embryonnaire, Brongniart, Quintine, Mirbel :) which exists in all flowering plants without exception, even before impregnation. This embryo-sac contains a substance which is gradually transformed into cellular tissue ; and being ultimately developed within the embryo-sac, forms (when not absorbed by the growth of the embryo) the *endosperm* or *albumen* of most authors. The *pollen tube* having made its way through the conducting tissue of the stigma, and having reached the ovule, penetrates the aperture in the teguments, traverses the summit of the *nucleus*, and following the intercellular passages, arrives at the embryo-sac. Having reached this point the pollen-tube presses before it the membrane of the embryo-sac, which is then folded all around it, so that the extremity of the pollen-tube appears to penetrate into

* Schwaun Mikroscopische Uutersuchungen uber die Uebereinstimmungen in der struktur und dem Wachsthum. der Thiere und Pflanzen. Berien 1838-39.

† Schleiden, sur la formation de l' ovule, et l' origine de l' embryon dans les phanerogames, Anu des Scien. Nat : 2nde Série. Botan. Mars, 1839.

‡ Notes pour servir á l' histoire de l' embryologie végétale par M. M. Mirbel et Spach Anu des Scien Nat. 2nde Serie. Botan, Avril. 1839.

the sac; though in reality it is outside of it. Thus inclosed the extremity of the pollen-tube enlarges into the form of an oval spheroid, and its contents are converted into cellular tissue; at its sides are formed the lateral organs or cotyledons, from which the extremity remains distinct, and is developed into the plumule. The portion of the tube situated above the embryo, and which is embraced by a duplicature of the embryo-sac, is gradually, but completely obliterated; so that the embryo is then left free within its sac. In this way the embryo is formed of two membranes: the indented embryo-sac, and the membrane of the pollen-tube. With these statements of Schleiden, the still more recent observations of Wydler * agree, except as regards the folding in of the embryo-sac, which this observer has never met with: but it appeared to him that the cavity of the sac elongated itself under the form of a straight canal, even to the summit of the ovule, and there opened in the *endostome* and received the extremity of the pollen-tube.

The importance of forming a determinate conclusion regarding the origin of the embryo is greatly enhanced by the influence it must have in affecting our notions of what are at present considered the male and female organs (stamens and pistils;) for if the above observations of Schleiden be correct, the anther must be considered as a female ovarium, and each grain of pollen as the germ of a new organism, being determined in its developement by the secretions of the embryo-sac: this last structure therefore being held to correspond with the male organ.

In the most recent work on Structural and Physiological Botany (the "Leçons de Botanique of M. A. de St. Hilaire,) the indeterminate state of our knowledge regarding the origin of the vegetable embryo is pointed out, and the author concludes by saying, "Espérous que de nouvelles recherches achéveront de lever les doutes que l' on pourrait concevoir encore." With the hope of removing some of the uncertainties which are yet attached to this litigated question, and of gaining some certain information on many interesting, but yet undetermined points, I attempted the following observations on the mode of developement of the embryo in Tropœolum Majus, the results of which will I think materially contribute towards forming a true theory of phœnogamic embryology.

The extreme simplicity of the *ovarium* of the Tropœoleæ, their *monospermous carpels*, and the large size of their *ovules*, render the indivi-

* Wydler, Note sur la formation de l' embryon (extrait d'une lettre de M. Wydler, professeur á Berne communique par M. A. St. Hilaire a l' Academie des Sciences a Paris, October, 1838.)

duals of this family peculiarly fitted for observations of this kind, and in these respects they are resembled by their allies, the Geraniaceæ, and, in fact, by most plants with one seeded carpels.

The following observations are arranged under seven general heads, corresponding with as many progressive periods in the growth of the ovarium, extending from the completion of the anatropous developement of the ovule to the perfect formation of the embryo; a period extending from the commencement of the expansion of the bud to the complete formation of the fruit.

First Period. On making a perpendicular section of a carpel (just before the expansion of the bud) from its dorsum inwards towards the axis of the pistil, the solitary ovule is at the same time divided, and is found to have completed its *anatropous* developement. (fig. I.) Continuous with that part of the *columella* which forms the placenta, is a portion of rather firm cellular tissue enclosing a bundle of vessels and forming the so called *umbilicus:* this, with the vessels it encloses, descends in apposition with the placenta to form the raphê; (fig. I. a.) and, near the point where it terminates in the base of the ovule, the vessels gradually terminate in closed extremities. The nucleus has only one tegumentary membrane, at the apex of which is presented the exostome opening close by and to the outside of the umbilicus (fig. I. a.) The conducting tissue of the style may be traced between the columella, and that prolongation of the carpellary leaf which forms the style, into the carpellary cavity as far as the exostome, with which it is brought in contact by the anatropous developement of the ovule. (fig. I. b.) The vessels which proceed along the placenta, to form the raphè are spiral vessels and annular ducts; and, at the point at which they make a turn downwards towards the chalaza, many of them end in closed extremities, while the vascular structure of the raphè usually terminates in a single vessel. (fig. I. d.)

Second Period. (Fig. II.) During the expansion of the bud, before the dehiscence of the anther, and therefore before impregnation, a small elliptical cavity (fig. II. b.) appears near the apex of the nucleus, having a delicate lining membrane, formed by the walls of the surrounding closely approximated cells. This cavity is the *embryo-sac* (sac embryonnaire, Brongniart and F. G. F. Meyen; membrana amnü, Malpighi: Quintine, Mirbel) from the apex of which a minute canal may be traced through the nucleus to the exostome (fig. II. a.) At this period, the apex of the embryo-sac encloses a minute quantity of organizable mu-

cilage, containing many small bodies having the appearance and characters of cytoblasts. (c.)

Third Period. (Fig. III). The apex of the nucleus is now inclined, and the exostome approximated to the axis of the pistil. The cavity of the nucleus (embryo-sac) is much enlarged and lengthened: its mucilage has disappeared, and in the place of it is formed *an elongated diaphanous utricle* (utricule primordiale, Mirbel; visicule embryonnaire; F. G. F. Meyen: l' extremite anterieure du boyan pollenique, Sehdeiden,) enclosing a quantity of globular matter (globulo cellular cambium, Mirbel: cytoblasts, Schneiden) (b.). This *primary utricle* is developed wholly within the embryo-sac, from whch it can be clearly seen to be distinct.

Fourth Period. (Fig. IV.) *After impregnation.* With the increased developement of the embryo-sac, the primary utricle, as it elongates, becomes distinctly cellular, by the developement of minute cells from the *cytoblasts* in its interior: while at the extremity next the base of the nucleus it is terminated by a spherical extremity consisting of numerous globular cells, (d.) The primary utricle, at this period, assumes the character of that organ described by Mirbel as the *suspensor:* and its spherical extremity constitutes the first trace of the embryo. The pollen-tubes are not found to descend into the carpellary cavity; but the *fovilla* with its *granules* is seen abundantly diffused through the passage leading from the style to the *exostome*, thus proving that impregnation has occurred.

Fifth Period. (Fig. V.) At this stage the spherical extremity of the suspensor enlarges and almost entirely fills the cavity of the embryo-sac; and it now becomes more evident that it constitutes the axis of the embryo. (d.) The suspensor is correspondingly lengthened by an increase in the number and size of its cells, while its upper extremity now protrudes through the apex of the embryo-sac, the apex of the nucleus, and through the exostome; from this, its upper extremity, there is a considerable developement of cells, many of which terminate abruptly and hang loosely in the passage leading from the style, while others unite in forming a process, which passes round the outside of the ovule (in the direction of its axis) into the carpellary cavity, and between the inner surface of the carpel and the the outer surface of the ovule (e.) From the important functions which I believe this organ to perform, it may not be improper to point out more particularly its intimate structure. It is composed of from nine to twelve rows of elongated cells (*cylindren chyma*) and its

extremity resembles in its general appearance, and in the anatomical condition of its cells, the spongiole of a root. When the ovule is removed from its carpel, and slight traction is made upon this cellular process, the suspensor, with the attached embryo, may be withdrawn from the embryo-sac, through the exostome and apex of the nucleus; thus proving the perfect continuity of this cellular process with the suspensor, and through it, with the embryo itself.

Sixth Period. (Fig. VI.) The suspensor is now more attenuated; the cellular process with which it is organically united has reached the outside of the base of the ovule, and is of firmer consistence; the cells of its extremity abound in cytoblasts, shewing it to be yet progressing in its developement. With the growth of the embryo, two lateral processes are observed to proceed in opposite directions from the sides of its axis, forming evidently the first traces of the cotyledons (d.)

Seventh Period. (Fig. VII.) All distinction between the nucleus and its tegumentary membrane has now ceased, and the embryo-sac has one only envelope. The cellular process connected with the suspensor has become so much developed, that its extremity has passed around the base of the ovule, and is directed towards the axis of the pistil. The lateral processes of the axis of the embryo have become distinct fleshy cotyledons, extending backwards from their point of origin towards the radicle, as well as forwards in the direction of the plumule: both of which organs they enclose in corresponding depressions in their opposed surfaces (d.) With the developement of the radicle towards the exostome, the opposite extremity of the axis of the embryo, in the form of the plumule, extends towards the base of the ovule, but is still enclosed in the depression formed by the concavity of the cotyledons. At each side of this extension of the axis the first traces of the plumular leaves make their appearance, alternating with the cotyledons.

The subsequent changes consist chiefly in the great developement of the cotyledons, which ultimately come to occupy the whole cavity of the nucleus, filling the space usually taken up by the albumen, which is awanting in this natural family.

The results of the foregoing observations derive importance; 1st, from their tending in no slight degree to settle the question regarding the origin and mode of developement of the embryo; 2nd, from the light they serve to throw upon many obscurities relative to the morphology of the embryo; and 3rd, from the discovery of an organ, which from its anato-

mical relations, and apparent functions, would appear to be *the true organic placenta.*

I have shewn that the formation of the embryo-sac, and the developement of cytoblasts within it, take place at a period prior to the impregnation of the pistil: and that even the primary utricle itself, which Schleiden considers as the extremity of the pollen-tube, makes its appearance before the emission of the pollen from the anther, and before the expansion of the three lobed stigma; therefore the origin of that organ cannot be referred to the influence of impregnation; as had been already pointed out by Mirbel and Spach in the case of Zea Mays. At its first appearance the primary utricle is seen to be quite distinct from the embryo-sac, even at its apex, with which however it is brought in contact at a subsequent period, and ultimately even penetrates that membrane: so that in this instance at least the primary utricle can not result from a depression or involution of the embryo-sac; as has been maintained by Brongniart.

After the expansion and impregnation of the stigma, the pollen-tubes may be traced in the conducting tissue of the style, but not so far as the exostome; however, in the channel leading to this point the pollenic granules are found in abundance, and are doubtless brought in contact with the outer surface of the embryo-sac, through the exostome and the minute canal in the apex of the nucleus. As at this period the first trace of the embryo appears in the form of the spherical body at the inferior extremity of the primary utricle, which has now assumed the character of the suspensor, I am induced to consider the origin of this body as resulting from a peculiar process of nutrition, determined by the material or dynamic influence of the fovilla, conveyed through the medium of the primary utricle or suspensor; and, as it is through this organ that the embryo appears to derive its nourishment during the period of its developement, we should, from this function, as well as from its anatomical relations, consider the suspensor, as the true umbilical cord; and transfer to it the name of *funiculus* from that medium of connexion between the ovule and columella, which has erroneously been viewed as the umbilical cord: to this however I would apply the name of *podosperm*, as denoting its relation to the ovule. As it is necessary that an umbilical cord should be organically united with the embryo, the impropriety of considering the organ described by Malpighi as the "*vas umbilicale*" in that light, will become sufficiently obvious. This structure consists of a minute cellular process extending from the base of the embryo-sac to the base of the nucleus, and has been found chiefly in the Cucurbitaceæ and Rosaceæ. It appears, however, to

be but a mere appendage of the embryo-sac, from which it takes its origin, and often never reaches the base of the nucleus, and cannot therefore be the medium of nutrition even to the embryo-sac. To this organ, therefore, it would be better to confine the name given to it by Dutrochet, that of the *hypostate*, as pointing out merely its anatomical relations.

The cellular process, I have described above as proceeding from the extremity of the suspensor (umbilicus) next the exostome, around the outer surface of the ovule, into the carpellary cavity, is an organ of unusual occurrence; and, as far as I am aware, its functions have never been noticed. From its mode of growth and structural relations it must be of very essential importance to the origin and developement of the embryo. It has recently been pointed out by F. G. F, Meyen ‡ that in the great majority of instances, the pollen-tube, after having penetrated the exostome is brought in contact with the apex of the embryo-sac, with which it there contracts an adhesion: from this period the changes consequent on impregnation date their commencement, and under the direct influence of this immediate application of the fovilla to the embryo-sac, continue with uninterrupted regularity. But in the case of Tropæcolum Majus, as the pollen-tubes never reach the embryo-sac, some additional means are required to ensure such a *continuance* of the action of the fovilla on the primary utricle, as is necessary for the developement, at its extremity, of the spherical cellular body, which subsequently becomes the embryo. This action then, I believe to be effected by the projection of this cellular process from the primary utricle: which by being immersed (so to speak) in the fovilla, is made the medium for the transmission of the latter to the primary utricle, and, through it, to the embryo itself: for which office the structure of its extremity (so like the spongiole of a root) renders it peculiarly fitted. But if not concerned in the impregnation, it must at least be so in the nutrition of the embryo; and since the chalaza is the medium of nutrition only to the nucleus and its membranes, it is easy to shew how erroneously vegetable physiologists have viewed it as the true organic placenta, the functions of which may with justice be ascribed to the structure I have pointed out; which, like the placenta in the animal kingdom, communicates with the embryo by means of a true umbilical cord.

I have noticed, in the preceding observations, that the first appearance of the cotyledons is accompanied by a corresponding elongation of the axis of the embryo, owing to an extension of its globular cells: so that the

‡ Meyen, Observations sur la Fecondation des Végétaux Anu des Scien. Nat. Avril 1841.

cotyledons necessarily arise from the axis of the embryo. Hence the opinion held by many morphological writers that "the axis results from a union of the cotyledons, or of their petioles," is proved to be without foundation; for the foregoing observations shew that the lateral projections, which constitute the first traces of the cotyledons are composed of cellular tissue developed on opposite sides of the axis of the embryo; and are therefore new formations, arising from determinate points, and deriving their nourishment from the substance of the axis.

APPENDIX.

APPENDIX.

1.

Extract from a letter on the Sickness at Kotra in Upper Sinde, addressed to the Superintending Surgeon, from W. T. Babington, Esq.

Presented by the Medical Board, May, 1842.

In January, 1841, I arrived at Kotra with the left wing 1st Light Cavalry (Lancers), and from that date until April, little or no sickness had occurred; about the latter end of this month, or the commencement of the hot season, a fever of a bilious remittent character broke out amongst the troops, attacking both Europeans and natives, which, if treated at an early stage, was easily subdued by the administration of purgatives, followed by tonics, such as arsenic, quinine, steel, &c. according to the state of the patient; but in consequence of the excessive heat of the place, patients were a very long time recovering from the debility caused by a few repeated attacks. It was not by any means of a fatal kind, only two or three casualties having occurred amongst the men of the wing under my charge, and even in these, organic disease had previously existed.

The deaths that took place to so lamentable an extent, were sudden and solely attributable to the hot wind which prevailed so severely during the months of June and July, that those exposing themselves to it during the day, were generally brought into Hospital either dead, or died in ten minutes after, presenting the symptoms of apoplexy; every treatment was adopted that I thought could be beneficial, such as bleeding, both general and local, the administration of cathartics and stimulating injections, the application of sinapisms to the feet, and in fact every remedy likely to lessen the accumulation of blood to the head, but death occurred so suddenly as not to allow time for the action of medicine.

In conclusion, I beg leave to state that I made every inquiry from the natives of the place, who suffered equally with ourselves, and who stated that even they themselves left the place during this most trying time of the year, nor could I learn that the present season had in any way been worse than former ones.

2.

Table, shewing the comparative Means and Extremes of Rain-fall and Temperature, at Malcolm Peth, Paunchgunnee, Bombay, and Poona, during the Rainy Season of 1842. By J. Murray, Esq.

Presented by the Medical Board.

Months.	Amount of Rain.				No. of fair days.				Greatest daily fall of Rain.				Mean Temperatnre.				Mean daily variation of Temperature.			
	Malcolm Peth.	Paunch-gunnee.	Bombay.	Poona.	Malcolm Peth.	Paunch-gunnee.	Bombay.	Poona.	Malcolm Peth.	Paunch-gunnee.	Bombay.	Poona.	Malcolm Peth.	Paunch-gunnee.	Bombay.	Poona.	Malcolm Peth.	Paunch-gunnee.	Bombay.	Poona.
1842	I. c.	I. c	I. c.	I. c.					I. c.	I. c.	I. c.	I. c.	° ′	° ′	° ′		° ′	° ′	° ′	
June	37 86	4 48	17 26	1 39½	2	14	5	23	6 10	1 42	6 0	0 28	65 8	70 3	85 2		4 7	7 7	4 1	
July	117 76	24 93	23 06	5 94	0	3	3	15	12 74	3 61	11 0	1 42	63 2	68 0	82 9		4 9	3 9	3 5	
August	77 75	12 24	37 16	3 8½	0	3	0	15	9 87	1 78	6 0	0 79	63 1	67 0	81 2		3 4	4 3	4 8	
September	56 00	7 05	9 85	4 30½	1	3	6	13	7 32	0 61	3 0	1 45	65 5	68 8	81 2		6 0	5 9	4 6	
Total Monsoon	289 37	48 67	87 33	14 77½	3	23	14	66	12 74	3 61	11 0	1 45	64 4	68 5	82 6		4 7	5 4	4 2	

Note by the Secretary. A Table analogous to this, but having reference to the monsoon of 1835, will be found at page 213, of the 3rd number of the Society's Transactions. It will be useful to compare these tables, and also others that may be drawn up from future observations. — The difference between the existing tables regards the relative amount of rain fall at Paunchgunnee. In 1835, Malcolm Peth 196 inches; Paunchgunnee, 50 inches; Bombay, 55, inches. — In 1842 Malcolm Peth 289 inches; Paunchgunnee 48 inches; Bombay 87 inches: fractions are omitted.

3

Annual Return of Patients in the Lunatic Asylum, Bombay; from the 1*st January to the* 31*st December* 1841. By W. B. Barrington, Esq.

Presented by the Medical Board.

	Remaining on the 31st December 1840.	Admitted.	Total.	Discharged.	Died.	Embarked to Europe.	Deserted.	Remained.
January	37	7	44	6	2	"	"	36
February	36	11	47	5	"	2	"	40
March	40	10	50	9	1	"	"	40
April	40	9	49	11	"	"	"	38
May	38	3	41	6	"	"	"	35
June	35	9	44	9	"	"	1	34
July	34	5	39	4	"	"	"	35
August	35	7	42	4	1	"	"	37
September	37	7	44	4	"	"	"	40
October	40	9	49	8	1	"	"	40
November	40	5	45	5	"	"	"	40
December	40	14	54	8	2	"	"	44
Total		96		79	7	2	1	

Tabular Statement of the admissions and deaths for the last seven years from 1834.

Years.	Admitted.	Died.
1835	52	10
1836	43	8
1837	63	5
1838	60	11
1839	57	3
1840	80	8
1841	96	7

In addition to the tabular statement for the past year, I subjoin a statement of the admissions and deaths of the six preceding years, by which it will appear that the numbers admitted have increased nearly one hundred per cent since 1835, whilst the deaths in this increased number are numerically less. I have endeavoured repeatedly to ascertain the cause of this increase, but from the fact of the patient being almost invariably sent by the Magistrate of Police without any reference either to the family, occupation or habits, of the individual, I have scarcely ever been enabled to discover it: in some instances it has been traced to intemperance. The diminution in the mortality may be attributed to improvements in the wards, the greater facility of sea-bathing, since the formation of the bath, and more particularly the constant employment in the garden and other occupation suited to individual patients as well as various amusements in which some of them experience much pleasure.

Restraint has been, as much as possible, done away with, and every patient is kept in the open air nearly the entire day, except there is some particular cause or reason for his confinement. The friends of patients have always been allowed to remove them, even when not improved, and to this may in some degree be attributed the great increase of admissions lately, and not to a real increase of insanity: patients discharged in this manner are reported to the Medical Board as delivered over to their friends.

Colaba, 1st February, 1842.

4.

The late Assistant Surgeon John Fraser Heddle.

Since the publication of the last number of the Transactions, the Society has experienced the loss of the much valued associate whose name is prefixed to this paragraph.

Endowed with high proficiency in his immediate profession, Mr. Heddle also possessed extensive and well arranged information in History, Geography, Chemistry, Botany, Geology, and other branches of Natural History;—and these great and varied acquirements, always applied with an admirable spirit of philanthropy to increase the comforts and advance the happiness of mankind, were borne by this true lover of science with a humility so sincere and unaffected, that it was only in the unguarded moments of friendly intercourse, that the full measure of his knowledge and the perfect unselfishness of his disposition were allowed to become apparent even to those who enjoyed the privilege of his private friendship.

Though the only contribution made by Mr. Heddle to the Transactions of the Medical and Physical Society, titled "A* selection of cases of violent death which have formed the subjects of investigation before the Coroner of Bombay," is an excellent and practical paper, it conveys a very inadequate idea of the extent of the Society's obligations; — and the Secretary would ill discharge a duty due to the memory of his much esteemed friend, and to the Society,—did he not gladly avail himself of this opportunity of recording in these pages (what is unknown to others,) that by numerous acts of cheerful and unobtrusive co-operation, and by advice always practical and judicious and ever ready when solicited, Mr. Heddle's influence on the proceedings of this Society was not unimportant and is now the subject of grateful and pleasing recollection.

It was, however, as Secretary to the Geographical Society of Bombay and to the Agri-Horticultural Society of Western India, that Mr. Heddle enjoyed the fullest scope for the exercise of his talents; and these Societies, in a spirit of just admiration, are engaged in erecting a suitable monument commemorative of the rare endowments and the high-minded integrity which adorned their late Secretary and reflected honor upon them.

Such is the public testimony which has been borne to a life of usefulness and worth, cut short at the outset of a career of high promise;—nor have the private friends of this lamented individual been slow to testify their sympathy for his estimable qualities, and his early fall, by erecting a monumental obelisk on that spot of the Mahabuleshwar Hills where the remains of their departed friend repose.

Mr. Heddle arrived in Bombay, on the 6th December 1829, and died at Mahabuleshwar on the 6th March 1842. At different periods of his service he filled with marked credit the appointments of Assistant Garrison Surgeon and Deputy Medical Store-keeper at the Presidency; Store-keeper of the European General Hospital and Surgeon to the Coroner; Vaccinator and in Medical charge of the Police Corps. Latterly Mr. Heddle officiated as Deputy Assay Master and Acting Assay Master in the Mint, in which office he justly earned the confidence of the Government, and of that part of the community having transactions with that establishment.

* 1st Number of Transactions.

QUARTERLY PROCEEDINGS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

COMMITTEE OF MANAGEMENT FOR 1842.

President.

J. McADAM, ESQ.

Members.

R. H. KENNEDY, M. D. — J. McLENNAN, ESQ.
J. GLEN, ESQ. — J. BURNES, K. H.

Secretary for 1842 *and* 1843.

C. MOREHEAD, M. D.

Proceedings from 1*st October to* 31*st December*, 1841.

MEMBERS ELECTED.

Ordinary.

E. Sabbin, Esq., and G. J. McKenzie, Esq., Assistant Surgeons, Bombay Establishment; elected in accordance with Regulation No. 7.

Communications Presented.

1. A letter from the Royal College of Surgeons in London, acknowledging the 3d Number of the Society's Transactions.
2. A letter from Sir George Ballingall, thanking the Society for having elected him a Corresponding Member.
3. A letter from Government in the General Department, requesting a copy of the Society's Proceedings for transmission to the Honorable Court of Directors.
4. A letter from James Laidlaw, Esq., of Alexandria, acknowledging the receipt of the Numbers of the Society's Transactions.

5. Report of the Medical Statistics of Quetta; by A. H. Leith, Esq.; presented by the Medical Board.

6. Notes on the Climate, &c. of Dadur, by A. Deas, Esq.; presented by the Medical Board.

7. A Case of Hydrophobia ; presented by the Medical Board.

8. An Obscure Case of Phthisis Pulmonalis, by J. D. Cambpell, Esq ; presented by the Medical Board.

Proceedings from 1st January to 31 March, 1842.

MEMBERS ELECTED.

Ordinary.

D. A. Carnegie, Esq., Assistant Surgeon, and B. A. Bremner, Esq., Surgeon, in Bombay.

E. Mahaffy, Esq.; W. Braikenridge, Esq.; John Miller, Esq.; H. J. Carter, Esq.; W. R. Dimock, Esq.; James Vaughan, Esq., and C. J. Weston, Esq. Assistant Surgeons, Bombay Establishment ; elected in accordance with Regulation No. 7.

Communications Presented.

1. A letter from the Medical Society of Madras, returning thanks for the copy of No. IV of the Society's Transactions presented to them.

2. Report on the Fever prevailing at Bancoot, by T. Waller, Esq.; presented by the Medical Board.

3. A Case of successful excision of the Elbow-joint, performed on board H. M.'s S. Dreadnought, by Surgeon C. Bush ; presented by J. D. Campbell, Esquire.

4. Case of the late Major ——, by A. Duncan, Esq.; presented by the Medical Board.

5. Meteorological Observations at the Convalescent Station on the Mahabuleshwar Hills, for the months of November and December, 1841, and January, 1842, by J. Murray, Esq.; presented by the Medical Board.

Proceedings from 1st June, to 30th April 1842.

MEMBERS ELECTED.

Ordinary.

W. Campbell, Esq.; T. J. Young, Esq.; G. G. W. Maitland, Esq.; and J. Peet, Esq.; Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation No. 7.

Communications Presented.

1. Annual Report of the 2nd Battalion of Artillery for the year 1841 ; by T. Robson, Esq.; presented by the Medical Board.

2. Annual Report of the Native General Hospital for the year 1841, by A. Graham, Esq.; presented by the Medical Board.

3. Annual Return of Patients in the Lunatic Asylum, from 1st January to the 31st December 1841 ; by W. B. Barrington, Esq.; presented by the Medical Board.

4. Annual Report of the Civil Surgeon of Ahmedabad for the year 1841 ; by S. Sproule, Esq.; presented by the Medical Board.

5. Observations on the Iodide of Iron ; by D. Grierson, Esq.; presented by the Medical Board.

6. Annual Report of the 1st Troop Horse Artillery for the year 1841 ; by A. H. Leith, Esq ; presented by the Medical Board.

7. Annual Report of the 26th Regiment, N. I. for the year 1841 ; by A. Wright, Esq. ; presented by the Medical Board.

8. A Case of Tetanus ; by G. M. Seaward, Esq ; presented by the Medical Board.

9. Report on the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, for the year ending the 31st of December 1841, together with an account of the Climate and Medical Topography of the country ; by J. Floyd, Esq.; presented by the Medical Board.

10. A letter from W. T. Babington, Esq ; to the address of the Superintending Surgeon, regarding the sickness at Kotra; presented by the Medical Board.

Proceedings from 1st July to 30th September, 1842.

MEMBERS ELECTED.

Ordinary.

A. S. Thomson, Esq., Assistant Surgeon, H. M.'s 14th Lt Dragoons.

S. E. Trestrail, Esq.; M. Style, Esq.; F. Richardson, Esq.; W. J. Stuart, Esq.; and J. Russell, Esq., Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation, No. 7.

Communications Presented.

I. A letter from W. Watkins, Esq. requesting that his name may be withdrawn from the list of members.

2. A letter from H. Franklin, Esq., Deputy Inspector General of Hospitals, Bombay, acknowledging the receipt of the four published volumes of the Society's Transactions presented to him.

3 Annual Medical Report of Her Majesty's 2d or Queen's Royal Regiment, from the 1st of April 1841, to the 31st of March 1842 ; by R. H. A. Hunter, Esq.

4. History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment, during the monsoon of 1841, when quartered in the Colaba Barracks, Bombay ; by A. S. Thomson, Esq., M. D. Assistant Surgeon, 14th Light Dragoons, lately H. M.'s 17th foot.

5. Register of the Pluviometer at Bombay for the months of June and July 1842, presented by G. Noton, Esq.

Committee of Management for 1843.

President.

R. H. Kennedy, M. D.

Members.

J. Glen, Esq. J. G. Malcolmson, Esq.
J. McLennan, Esq. J. Burnes, K. H.

Secretary.

C. Morehead, M. D.

Proceedings from 1st October, to 31st December, 1842.

Members Elected.

Ordinary.

J. W. Moffat, Esq. Surgeon, Her Majesty's 14th Light Dragoons.

Communications Presented.

1. Statistical Reports prepared by the Medical Officers serving in Scinde with the Force under the Command of Brigadier England; presented by the Medical Board.
2. Remarks on the Practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases; by John Peet, Esq.
3. Medico-Historical Abstract of the first year's Service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons at Kirkee under the Bombay Presidency; by J. W. Moffat, Esq. Surgeon, H. M.'s 14th Light Dragoons.
4. Register of the Pluviometer at Bombay for the months of September and October 1842, presented by G. Noton, Esq.

The following Proceedings of the Committee are recorded and published for the information of the Society.

Bombay, 26th December, 1842.

Sir,— I am directed by the Committee of the Medical and Physical Society to transmit for your information the annexed copy of a Resolution which has been recorded in the Society's Proceedings, and to express a hope that the proposition therein made will meet with your concurrence.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) C. MOREHEAD,
Secretary.

To
R. H. A. Hunter, Esq.
Staff Surgeon.

Staff Surgeon R. H. A. Hunter, lately Assistant Surgeon in the 2d or Queen's Royal Regiment, being about to leave India for England, It is resolved — That in testimony of the just sense entertained by the Medical and Physical Society, of the obligations which Dr. Hunter has conferred by contributing the many excellent papers which have been published in the several Numbers of the Society's Transactions, — that Gentleman be requested to permit, on his departure from India, his name to be transferred from the list of Ordinary to that of Corresponding Members.

2. That the above Resolution be recorded in the Quarterly Proceedings and in the next number of the Society's Transactions.

Bombay, (Signed) C. MOREHEAD,
24th December, 1842. *Secretary.*

Bombay, 27th December, 1842.

Sir, — I have the honor to acknowledge your letter of the 25th instant, conveying a copy of a Resolution which has been recorded in the Society's Proceedings in my favor, and expressing a hope, that the proposition therein made might meet with my concurrence.

In reply permit me to asure the Committee of the Medical and Physical Society, that I feel highly gratified by this mark of their approbation, and express not only a ready concurrence but also my best thanks for their very flattering proposition, and to say it is an honor, however unmerited, I shall ever feel proud of and cherish.

I have the honor to be
Sir,
Your most obedient Servant,
(Signed) R. H. A. HUNTER,
Staff Surgeon.

To

C. MOREHEAD, ESQ.
Secretary Medical and Physical Society, Bombay.

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

Circular.

1. The Committee adverting to the large sum (Rs. 778) of accumulated arrears due by Subscribers, beg to direct attention to the Regulations of the Society relative to the payment of Subscriptions, viz.

8. "Ordinary Members to pay a fee of *five* Rupees on Election, and to contribute *twelve* Rupees annually, payable in *advance.*

9. "No member absent from India, shall be chargeable with his contribution for the period of his absence.

10. "Any Member neglecting to pay his annual contribution for two years, shall be considered to have withdrawn from the Society, and his name will be erased from the list of Members."

2. The Committee consider it unnessary to do more than to point to these Regulations, for it must be evident that by neglecting to observe them the operations of the Society are impeded in many ways.

3. To those Members, however, whose arrears exceed two years Subscription, and to whom Regulation 10 is applicable, the Committee take this opportunity of intimating that should their Subscriptions not be paid up, before the 1st July next, the erasure of their names from the list of members will be recorded in the Quarterly Proceedings which fall to be published in that month.

C. MOREHEAD,

Secretary Medical and Physical Society.

Bombay, 23d January, 1843.

LIST OF DONATIONS FOR THE LIBRARY.

By the Editor.

Madras Quarterly Medical Journal, No. III and IV.

By the Authors.

1. Outlines of Military Surgery, by Sir G. Ballingall.
2. An Examination of Reviews contained in the British and Foreign Medical Review and the Medical Chirurgical Review of the Medical and Physiological Commentaries, by M. Paine, M. D.
3. Cuvierian Natural History Society. An account of Artesian Wells, by E. T. Kelaart, Esq.
4. A Treatise on the formation, constituents and extraction of the Urinary Calculus, by J. G. Crosse, M. D., F. R. S.
5. A. Discourse introductory to a course of Lectures on the Institutes of Medicine and Materia Medica; delivered before the medical class of the University of New York, at the session for 1841-42, by M. Paine, A. M., M. D., Professor, &c.
6. Dr. Paine's Answer to Circular Letters by Drs. Carpenter and Forbes, from the "Boston Medical and Surgical Journal."

By the Asiatic Society of Bombay.

Journal of the Bombay Branch Royal Asiatic Society, Nos. II. and III.

By E. F. Kelaart, Esq., M. R., C. S. L.

Testimonials in favour of John Hutton Balfour, M. D. Ed. F. R. S.

By M. L. Bouton, Esq., Secretary to the Society of Natural History in Mauritius.

A Copy of the Annual Report of the Society of Natural History in Mauritius.

By the Medical Board of Bombay.

1. The influence of Tropical Climates on European Constitutions ; by J. Johnson, M. D. and J. R. Martin, Esq.

2. Researches into the causes, nature and treatment, of the more prevalent Diseases of India and of warm Climates generally : 2d edition ; by J. Annesly, F. R. S., F. S. A,

3. Report on the Malignant Fever, called the Pali Plague, by J. Rankin, M. D. 1838.

4. Sketch of the Topography and Statistics of Dacca ; by James Taylor, Esq. 1849.

5. Outline of the Topography and Statistics of the Southern Districts of Oudh; by Donald Butler, M. D. 1839.

6. Notes on the Medical Topography of Calcutta, by J. R. Martin, Esq. 1837.

7. Notes on the Medical Topography of the District of Sarun, by R. Rankin, Esq. 1839.

8. Topography of Meerut and the principal Diseases which prevailed in the 1st Brigade of Horse Artillery at that place ; by J. Murray, M. D. 1839.

9. Topography of Assam ; by J. M'Cosh, Esq. 1837.

10. A General View of the present state of Lunatics and Lunatic Asylums in Great Britain and Ireland, and in some other kingdoms ; by Sir A. Halliday, M. D. and K. H. 1838.

11. General and Medical Topography of Kalee Kemaoon and Shore Valley ; by W. Dollard, Esq. 1840.

12. Sketch of the Medical Topography of Bistmath ; by D. A. Macleod, Esq. 1837.

13. Description of the new process of perforating and destroying the Stone in the Bladder ; by J. Atkinson, Esq. 1831.

14. Investigation of cases of poisoning ; by W. B. O'Shaughnessy, M. D.

15. Report on the Epidemic Cholera as it has appeared in the Territories subject to the Presidency of Fort St. George ; by W. Scott, Esq. 1824.

16. Cholera with original Views on Fever, &c.; by C. Searle, Esq. 1830.

17- Sketches of the Medical Topography of the Mediterranean, comprising an account of Gibraltar, the Ionian islands, and Malta ; by J. Hennen, M. D. F. R. S. E. 1830.

18. Hints to young Medical Officers of the Army on the examination of Recruits and respecting the feigned disabilities of Soldiers ; with official documents and the regulations for the inspection of conscripts for the French and Prussian Armies ; by H. Marshall, Esq. 1828.

19. A Report on the Medical Management of the Native Jails throughout the Territories subject to the Government of Fort William and Agra ; by J. Hutchinson, Esq. 1835.

20. Table and Reports on Diseases, &c.; published by the Medical Board of Madras, 1828.

21. Some Account of the General and Medical Topography of Ajmeer, by R. H. Irvine M. D. 1841.

By the Medical and Physical Society of Calcutta.

Transactions of the Medical and Physical Society of Calcutta, Vol. VIII. part 2.

LIST OF MEMBERS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

ORDINARY MEMBERS BOMBAY PRESIDENCY.

The asterisk (*) marks those members who are absent on furlough or sick leave.

Allender, G., M. D., *Assistant Surgeon.*
Arbuckle, W., M. D., *Assistant Surgeon.*
Arnott, A., M. D., *Surgeon.*
Arnott, F. S., M. D., *Assistant Surgeon.*
Atkinson, J. J., Esq., *Assistant Surgeon.*

Babington, W. F., Esq., *Assistant Surgeon.*
Barrington, W. B., Esq., *Assistant Surgeon.*
Batho, J. E., Esq., *Assistant Surgeon.*
* Behan, R. J., Esq., *Assistant Surgeon.*
Bell, D. C., Esq., *Superintending Surgeon.*
Black, C., M. D., *Assistant Surgeon.*
Bowie, W., M. D., *Assistant Surgeon.*
Boyd, J., Esq., *Surgeon.*
Boyrenson, F. A., M. D., *Assistant Surgeon.*
Braikenridge, W., Esq., *Assistant Surgeon.*
Bremner, B. A., M. D., *Surgeon in Bombay.*
Brown, R., M. D., *Surgeon.*
Burn, A., M. D., *Assistant Surgeon.*
Burnes, J., K. H., M. D., *Surgeon.*

Cahill, F. S., M. D., *Surgeon.*
Cannan, T., Esq. *Assistant Surgeon.*
Cameron, W. C., Esq., *Assistant Surgeon.*
Campbell, J. D., Esq., *Assistant Surgeon.*
Campbell, W. Esq., *Assistant Surgeon.*
Carnegie, D. A., M. D., *Assistant Surgeon.*
Carter, J. H., Esq., *Assistant Surgeon.*
Carter, H. J., Esq., *Assistant Surgeon.*
Collier, C. T., Esq., *Surgeon.*
Collum, W., Esq., *Assistant Surgeon.*
Craig, J., Esq., *Assistant Surgeon.*
Cramond, J., Esq., *Assistant Surgeon.*
Cruickshank, P., Esq., *Assistant Surgeon.*

Davidson, R. H., M. D., *Assistant Surgeon.*
Demock, W. R., Esq., *Assistant Surgeon.*
Dent, R., Esq., *Assistant Surgeon.*
Dickinson, G. H., Esq., *Assistant Surgeon.*
Doig, J., Esq., *Surgeon.*
Don, J., M. D., *Surgeon.*
Duncan, A., Esq., *Surgeon.*

Elliott, H. R., Esq., *Assistant Surgeon.*
Ellis, E., Esq., *Assistant Surgeon.*

Faithful, J. J., Esq., *Assistant Surgeon.*
Fogerty, W. K., Esq., *Surgeon in Bombay.*
Forbes, G. F., Esq., *Assistant Surgeon.*
* Fraser, J., Esq., *Assistant Surgeon.*
Frith, R., M. D., *Surgeon.*

* Gibb, H., Esq., *Surgeon.*
Gibson, A., Esq. *Surgeon.*
Gillanders, W. P., Esq., *Assistant Surgeon.*
* Glen, J., Esq., *Superintending Surgeon.*
* Gray, P., Esq., *Assistant Surgeon.*
Graham, A., Esq., *Surgeon.*

Hamilton, J. J., Esq., *Surgeon.*
Hathorn, H. P., Esq., *Surgeon.*
Hudson, H., Esq., *Assistant Surgeon.*

Impey, E., Esq., *Assistant Surgeon.*
* Inglis, J., M. D., *Surgeon.*
* Johnstone, H., Esq., *Surgeon.*

Kays, M. T., M. D., *Surgeon.*
Keith, J., Esq., *Assistant Surgeon.*
Kennedy, R. H., M. D., *Physician General.*
Kirk, R., Esq., *Assistant Surgeon.*

Larkins, T. B., Esq., *Assistant Surgeon.*
Leith, A. H., Esq., *Assistant Surgeon.*
Lowry, J. M., M. D., *Assistant Surgeon.*
Lodwick, T., Esq., *Assistant Surgeon.*
Lush, C., M. D., *Surgeon.*

Mackie, W., Esq., *Surgeon in Bombay.*
Mahaffy, E., M. D., *Assistant Surgeon.*
Maitland, G. P. W., Esq., *Assistant Surgeon.*
Malcolmson, J. P., Esq., *Assistant Surgeon.*
Manisty, T., Esq., *Assistant Surgeon.*
* McKenzie, T., Esq., *Assistant Surgeon.*

McKenzie, J., Esq., *Assistant Surgeon.*
McKenzie, G. J., Esq., *Assistant Surgeon.*
McLennan, J., Esq., *Surgeon.*
* McMorris, J., Esq., *Surgeon.*
Miller. J. C., Esq. *Assistant Surgeon.*
Milligan, S. D., Esq , *Assistant Surgeon*
Moffat, J. W., Esq., *Surgeon H. MS.*
* Montgomery, A., Esq., *Surgeon.*
Moore, H. S., Esq., *Assistant Surgeon.*
Morier, J. P., Esq., *Assistant Surgeon.*
Morehead, C., M. D., *Assistant Surgeon.*
Murray, J., Esq., *Surgeon.*

Neilson, W., M. D., *Assistant Surgeon.*
Nicolson, W., A. R., Esq., *Assistant Surgeon.*

Ogilvie, G. M., M. D., *Assistant Surgeon.*
Owen, R. B., M. D., *Surgeon.*

* Patch, J., Esq., *Surgeon.*
Peart, J. H., Esq., *Assistant Surgeon.*
Peele, R. D. C., Esq., *Assistant Surgeon.*
Pelly, S. M., Esq., *Assistant Surgeon.*
Peet, J., Esq., *Assistant Surgeon.*
Pigou, W. H., Esq., *Assistant Surgeon.*
Pitcairn, W., Esq., *Assistant Surgeon.*

* Ranclaud, M. A., Esq., *Assistant Surgeon.*
Richardson, F. Esq., *Assistant Surgeon.*
Ritchie, D. M. D., *Assistant Surgeon.*
Rooke, B. P., Esq., *Surgeon.*
Ross, J., Esq., *Surgeon.*
Russell, R. J., Esq., *Assistant Surgeon.*
Sabben, E., Esq., *Assistant Surgeon.*
Scott, J., Esq., *Surgeon.*
Seaward, G. M. S., Esq., *Assistant Surgeon.*
Shaw, G. J., M. D., *Assistant Surgeon.*
Smith, R. R., Esq. *Assistant Surgeon.*
Sproule, J., M. D., *Assistant Surgeon.*
Sproule, J. S., M. D., *Assistant Surgeon.*
Stewart, J., M. D., *Surgeon.*
Stuart, W. J., Esq., *Assistant Surgeon.*
Style, M., Esq., *Assistant Surgeon.*

Tawse, A., Esq., *Surgeon.*
Taylor, W. B., Esq., *Surgeon.*
Thom, W., Esq., *Assistant Surgeon.*
Thompson, M., Esq., *Assistant Surgeon.*
Thomson, A. S., Esq., *Asst. Surgeon H. MS.*
Trestrail, J. E., Esq., *Assistant Surgeon.*

Vaughan, J., Esq., *Assistant Surgeon.*

Walker, A., M. D., *Assistant Surgeon.*
Wallace, E. J., Esq. *Assistant Surgeon.*
Waller, T., Esq., *Assistant Surgeon.*
Ward, T. W., Esq. *Assistant Surgeon.*
Weston, C. J., Esq., *Assistant Surgeon.*
Wight, R., Esq., *Surgeon.*
Winchester, J. W., Esq., *Assistant Surgeon.*
Woosnam, R., Esq., *Assistant Surgeon.*
Wright, A., Esq., *Assistant Surgeon.*

Young, F. J., Esq., *Assistant Surgeon.*

W. B. O'Shaughnessy, Esq., *Professor of Chemistry, Medical College, Calcutta.*
J. P. Jackson, Esq., *Bengal Establishment,*
H. S. Fleming, Esq., *Surgeon, Madras Establishment.*
W. Middlemas, Esq., *Assistant Surgeon, Madras Establishment.*
A. Anderson, Esq., *Acting Surgeon to H. B. Majesty's Superintendent in China.*
J. G. Malcomson, Esq., *Formerly Surgeon, Madras Establishment.*

CORRESPONDING MEMBERS.

J. S. Law, Esq., *B. C. S.*
Captain Shortrede, *Superintendent of the Trigonometrical Servey.*
Dr. Pruner, *Chief Physician to the Military Hospital and Professor in the Medical College at Cairo.*
M. M. J. Desjardin, Esq., *Secretary to the Society of Natural History in Mauritius.*
Sir George Ballingall, *Professor of Military Surgery, Edinburgh.*
Dr. Laidlaw, *Alexandria.*
R. H. A. Hunter, Esq., *Staff Surgeon H. M.'s Service.*

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Art. I. — A General Sketch of the province of Guzerat from Deesa to Damaun. By A. Gibson, Esq., Vaccinator of the Deccan Division.

—— II. — Observations on the Climate of the Mahabuleshwur Hills. By J. Murray Esq., Surgeon of the Convalescent Station.

—— III. — A Report on a Disease which prevailed in Kattywar and in parts of the Zillah of Ahmedabad, in the years 1819 and 1820; addressed to the Secretary of the Medical Board. By Thomas Whyte, Esq., formerly of the Bombay Service.

—— IV. — A Report on a Disease which prevailed in part of Kutch and Kattywar, in the year 1815 and 1816; Addressed to the Secretary of the Medical Board. By J. McAdam, Esq., Superintending Surgeon Deccan Division, formerly Civil Surgeon in Kattywar.

—— V. — A Report on a Disease which prevailed in part of the Zillah of Ahmedabad in the years 1817, 1818 and 1819; addressed to the Secretary of the Medical Board. By J. Gilder, Esq., formerly of the Bombay Service.

—— VI. — A Few remarks on the Diseases in the Hospital of the 3rd Troop of the Horse Artillery at Deesa, during the months of August, September, October, November, and December 1834. By R. Brown, M. D. Assistant Surgeon, European General Hospital.

—— VII. — Observations on Dracunculus, extracted from the half yearly reports of the Diseases prevailing at Dharwar in the 1st Grenadier Regiment, in the year 1836. By D. Forbes, Esq., Surgeon.

—— VIII. — Historical Report of His Majesty's 2d or Queen's Royal Regiment for the year 1836. By R. H. A. Hunter, Esq., Assistant Surgeon. H. M.'s 2d Regiment.

—— IX. — Cases of Cardiac Disease and of Tubercular Phthisis occurring in His Majesty's 2d or Queen's Royal Regiment. By R. H. A. Hunter, Esq., Assistant Surgeon, H. M.'s 2d Regiment.

—— X. — A Few Notes on the Thermal Springs in theKonkan. By A. Duncan, Esq., Surgeon.

—— XI — Practical Surgical Cases. By W. B. Barrington, Esq., Civil Surgeon, Broach.

—— XII. — Notes on the state of Medical and Surgical Science in the countries bordering on the Indus. By P. Lord, M. B. in Medical Charge of the Cabool Mission.

—— XIII. — A Selection of cases of violent Deaths which have formed subjects of investigation before the Coroner of Bombay. By J. F. Heddle, Esq., Surgeon to the Coroner.

—— XIV. — A Letter on the manner of breeding Leeches practised in the Deccan ; addressed to the Secretary of the Society. By A. Gibson Esq., Vaccinator, Deccan Division.

Appendix.

1. — Two cases of infantile Disease terminating fatally. By A. Duncan, Esq.

2. — Two cases of rapidly fatal cerebral inflammation, with obscure symtoms, complicated with croup-like cough. By J. Murray, Esq.

3. — Case of Poisoning by Bichloride of Mercury. Presented by J. Murray, Esq.

4. — Case of Poisoning by Opium. Presented by C. Morehead, Esq. M. D.

5. — A Case of Vascular Sarcoma and one of Femoral Aneurism. By C. F. Collier, Assistant Surgeon.

6. — Case of spontaneous evolution or doubling, which occurred after an arm presentation. By T. Waller, Esq.

7. — Urethral obstruction by a calculus in a child of three years of age. By A. Duncan, Esq.

8 — Observations on the use of " Meeta tale," or the oil of the Sesamum Orientale, in healing wounds. By A. Burn, M. D.

9 — Disease produced by the Anacardium Orientale, or Marking Nut. By A. Gibson, Esq.

10. — On the unhealthiness of some parts of Candeish at certain seasons. Presented by T. Williamson, Esq., Revenue Commissioner.

11. — Case of Ephidrosis Partialis. By A. Duncan, Esq.

12. — Case of Necrosis of the left radius. By J. P. Malcolmson, Esq.

13. — Case of sloughing and discharge of 25 inches of large intestine in Dysentery. By R. Brown, M. D.

14. — An Extract from Dr. Inglis' Report of the Diseases of the 22d Regiment, N. I. for the first half year of 1836.

15. — General Abstracts of the returns of sick of the European and Native Troops belonging to the Presidency of Fort St. George, for the years 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834 and 1835. Presented by the Medical Board of Madras.

16. — Tabular View of the Meteorology of the Convalescent Station of the Mahabuleshwur Hills, for each month, from October 1st 1836 to September, 30th 1837. By J. Murray, Esq.

17. — Case of Dysentery with sloughing, and discharge of a portion of the intestinal canal.

18. — Case of Tetanus extracted from Dr. McLennan's report of the Presidency Native General Hospital, for the half year commencing on the 1st January, and terminating on the 1st July, 1835.

19. — Form of Meteorological Table, recommended by the Committee for general adoption.

20. — Proceedings connected with the establishment of the Medical and Physical Society of Bombay.

21. — Regulations of the Medical and Physical Society of Bombay.
22. — Monthly and Quarterly Proceedings of the Medical and Physical Society of Bombay.
23. — List of Donations for the Library.
24. — List of Members of the Medical and Physical Society of Bombay.

No. II.

TRANSACTIONS FOR THE YEARS, 1838, 1839.

ART. I. — Report on the Disease at Pali, as observed in January and February, 1838. By F. Forbes, A. M. Assistant Surgeon.
—— II. — Annual Report of the Diseases of H. M.'s 2d or Queen's Royal Regiment, from the 1st of April 1837, to the 31st March, 1838. By R. H. A. Hunter, Assistant Surgeon, H. M.'s 2d Regiment.
—— III. — Medical Report on the Mahabuleshwur Convalescent Station for the season 1837—38. By J. Murray, Esq.
—— IV. — Annual Report of the Diseases in the European General Hospital of Bombay, from the 1st of January, to the 31st of December, 1838. By James Bird, Esq.
—— V. — Cases illustrative of the Pathology of the Diseases of Bombay. By C. Morehead, Esq., M. D. Part I.
—— VI. — Topographical and Statistical details of Ahmednuggur. By R. T. Barra, Esq. Surgeon 1st Battalion of Artillery, with a Geological notice of the surrounding country. By Lieut. Ash, Bombay Artillery.
—— VII. — Statement of some peculiar Symptoms supposed to have been induced by a Narcotic Poison. By D. C. Bell, Esq.
—— VIII. — Cases illustrative of the influence of Lunar Agency as an occasional cause of periodical exacerbations in various Chronic Diseases. By J. Murray. Esq.
—— IX. — Report on the Measles which prevailed epidemically in the Central Schools at Byculla, during the months of December 1338, January, February, and March 1839. By C. Morehead, M. D.
—— X. — A few remarks on the Vegetation, the People, and Diseases, of the Deccan. By A. Gibson, Esq.
—— XI. — Observations on the Climate of Sattara. By A. Young, Esq.
—— XII. — Cases of Cardiac Disease and Aneurism of the Aorta. By R. H. A. Hunter, Esq., H. M.'s 2d Regiment.
—— XIII. — Surgical cases. By W. B. C. Graham, Esq. Civil Surgeon, Rajcote.
—— XIV. — Case of Prolapsus Ani cured by actual cautery. By John Scott, Esq.
—— XV. — Notes on the treatment of Cholera with Acetate of Lead. By C. Morehead, M. D.
—— XVI. — Tabular View of the Meteorology of the Convalescent Station on the Mahableshwur Hills for each month, from October, 1st 1837 to September 30th 1838. By J. Murray, Esq.
—— XVII. — Tabular View of the Meteorology of the Convalescent Station on

the Mahabuleshwur Hills, for each season, from 1st October, 1837 to 30th September, 1838.

—— XVIII. — Meteorological Register kept at Ahmednuggur, from 1st July 1835 to 30th June, 1836. By R. T. Barra, Esq.

—— XIX. — Means of the Thermometer and amount of Rain-fall in the months of June, July, August, and September 1837, at Broach, calculated from the register kept. By W. B. Barrington, Esq.

—— XX. — Register of the Pluviometer at Kaira in Guzerat, 1838. By A. Burn, M. D.

Appendix.

1. — Notice of the Proceedings of the Committee of the Society relative to the Medical Education of the Natives of the Bombay Presidency.
2. — Memoranda of the Proceedings of the Committee of the Society regarding some indigenous articles of Materia Medica, brought to its notice by Dr. Burn, Civil Surgeon, Kairá, and Dr. Gibson, Vaccinator, Deccan.
3. — Medical Report of the 6th Regiment N. I. By T. Robson, Esq.
4. — Miscellaneous remarks on the Maldives and Chagos Archipelago. By T. Campbell, Esq., Assistant Surgeon.
5. — Observations on Scurvy as occurring in the crew of the Palinurus. By W. Hardy. M. D.

Regulations of the Medical and Physical Society of Bombay, 1839.

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Sketches of a Horny Tumour, removed by W. Deacon, Esq.

No. III.

Transactions for the year 1840.

Art. I. — A Short Sketch af the Medical Topography of the Fortress of Bukkur and the Cantonment of Sukkur in Upper Scinde, and of the Diseases which prevailed in the Brigade there, from the month of March to that of December, 1839. By J. Don, M. D. Staff Surgeon.

—— II. — Notes on the Medical Topography of Tatta on the River Indus with a short notice of the Diseases which prevailed in the 22d Regiment N. I. when stationed at Tatta, or in progress up the River Indus in boats, during the months of August, September, and October 1839. By J. Inglis, M. D.

—— III. — Annual Report of the Native General Hospital at Bombay for the year 1838.

—— IV. — Catalogue of Articles of the Materia Medica of Europe and India, found at Aurungabad and in its vicinity. By A. Walker, M. D.

—— V. — Annual Report for 1839, of the 1st Regiment, Bombay European Infantry, stationed at Aden. By J. Howison, Esq.

Art. VI. — Report on the cases of Aden Ulcers received in the Marine Battalion Hospital, Bombay, 1839. By A. Campbell, M. D.

—— VII. — Practical Observations on the Pathology and Treatment of Tropical Dysentery. By James Bird, Esq.

—— VIII. — Annual Report of Native General Hospital at Bombay, for the year 1839.

—— IX. — Annual Report of the Diseases, in the Jail and Detachment Hospitals of Rutnagherry in the Southern Concan, from the 1st January, to the 31st December 1839. By John Bourchier, M. D.

—— X. — Medical History of H. M.'s 2d or Queen's Royal Regiment, from the 1st of April 1838, to the 31st of March 1839, By R. H. A. Hunter, Esq.

—— XI. — Medical History of H. M.'s 2d or Queen's Royal Regiment, from the 1st of April, 1839, to the 31st March, 1840, during the Campaign in Affghanistan. By R. H. A. Hunter, Esq.

—— XII. — A Synopsis of ten years Meteorological Observations on the Mahabuleshwur Hills, Lat 17° 56' N. Long 73° 30′ E. Heighth above the sea, 4500 feet. Table 1. showing the means and extremes of Temperature &c. for each month (1828-1838.)

Table II shewing the means and extremes of Temperature, &c. for each season (1828-1838). Summary of mean and extreme decennial results.

Appendix.

1 — Abstract of the Annual Reports, for the year, 1838 and 1839 of the Field Detachments stationed at Balmeer. By the late Assistant Surgeon S. Prichard.

2. — Meteorological Observations, chiefly on solar radiation, made at Mhow, by A. Weatherhead, Esq. M. D.

3. — Notes on the Scurvy, as it has appeared at various times, in the Jail at Rutnagherry, by J. Bourchier, M. D.

4. — Description of the operation of Lithotomy, as performed by a Native Surgeon in the presence of A. Gibson, Esq. communicated by that Gentleman in a letter addressed to the Secretary to the Society.

5. — A. short Notice of the Station of Kurachee in Lower Scinde. By F. S. Cahill, M. D. in a letter addressed to the Superintending Surgeon.

6. — Notes on the Climate of Paunchgunnee situated on the Eastern side of the Mahabuleshwur Hills.

7. — Account of a Disease, which affects the Camels in the province of Lus ; called Photo Shootur by the Natives, and supposed by them, to have properties analogous to those of the Variolæ Vaccinæ. Extracted from Dr. Winchester's report on the Topography of Tatta.

8. — Case of dislocation of the lower Jaw, caused by the act of vomiting; communicated by W. Mackie, Esq.

9. — Note on the Catalogue of Articles of the Materia Medica. By A. Walker, M. D.

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No. IV.

Transactions for the year 1841.

Art. I. — Experiments illustrative of the Physiological effects of Calomel on the Gastro-intestinal mucous membrane of Dogs. By J. Murray, Esq.

—— II. — Report on the Diseases which have occurred in the H. C.'s Steam Flotilla on the rivers of Mesopotamia, from the 1st January to the 31st December, 1839, with a short sketch of the Climate and Topography. By John C. Floyd, Esq. Surgeon in charge.

—— III. — Report of the 1st Troop Horse Brigade, stationed at Sholapoor, Poona, and on Field Service in Scinde, for the years 1838, 1839, and 1840. By A. H. Leith, Esq.

—— IV. — Statistical Review of the Climates of the principal Stations for European Troops in the Bombay Presidency. By R. H. A. Hunter, Esq. H. M.'s 2d or Queen's Royal.

—— V. — On the Jungle Fever of Candeish. Extracted from the Annual Report of the 15th Regiment N. I. for the year, 1840. By A. Graham, Esq.

—— VI. — Observations on the Dracunculus as it prevailed in 22d Regiment, N. I from April till September, 1841. By D. Grierson, Esq.

—— VII. — Notes sur la plaie du Yemen, offrant l' analyse d' une monographie de cette Maladie. Par M. Le Lieutenant Colonel Dr. Chedufay, Medecin Inspecteur des armees d' Arabie.

—— VIII. — Report on the Medical Statistics of Quetta. By A. H. Leith, Esq.

Appendix.

1. — Catalogue of Medicines found in the Bazars of Hydrabad, Khyrpur and Shikarpur. By the late P. B. Lord, M. D.

2. — General Remarks on the remedial effects of the extract of Ganja as observed at the Native General Hospital at Bombay: forwarded with two cases of Tetanus, treated in that Institution. By A. Graham, Esq.

3. — Extract from the annual Report of the sick in Hospital of the 10th Regiment, N. I. stationed at Aden, for 1840. By C. Black, Esq.

4. — Extract from the second half yearly Report of the Oculist's Department for 1840. By M. Stovell, Esq.

5. — Case of Hydrophobia.

6. — Case of extensive tubercular deposition over the convex surface of the

Brain, with softening of the left hemisphere, and slight serous effusion into the lateral Ventricle. By J. Murray, Esq.
7. — Notes on the Climate, &c. of Dadur. By J. Deas, Esq.
8. — Obscure Case of Phthisis Pulmonalis. By J. D. Campbell, Esq.
9. — Letter on the treatment of the Aden Ulcer from Dr. Pruner, Chief Physician to the Military Hospital and Professor in the Medical College at Cairo, to the Members of the Medical Board in Bombay.
10. — Bombay Branch of the Royal Asiatic Society.

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No. V.

Transactions for the year, 1842.

Art. I. — Report of the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, from the 1st January, to the 31st December 1841, together with an account of the Climate and Medical Topography of the Upper Euphrates. By John C. Floyd, Esq.
—— II. — Annual Report of the Native General Hospital at Bombay, for the year, 1841. By A. Graham, Esq.
—— III. — Annual Medical Report of H. M. 2d or Queen's Royal Regiment, from the 1st of April, 1841, to the 31st of March, 1842. By R. H. A. Hunter, Esq.
—— IV. — Portion of the Annual Report of the 1st Troop Bombay Horse Artillery, embracing the first eleven months of the year 1841. By A. H. Leith, A M.
—— V. — Reports of the Medical Statistics of Upper Scinde, drawn up by the Medical Officers serving with the Force under the command of Brigadier England.
—— VI. — History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment during the Monsoon of 1841, when quartered in the Colaba barracks, Bombay. By Arthur S. Thomson, M. D., Assistant Surgeon, 14th Dragoons, lately 17th Foot.
—— VII. — Annual Report of the 2nd Battalion, Bombay Artillery, stationed at Fort George, for the year 1841. By T. Robson, Esq.
—— VIII. — A Letter addressed to the Superintending Surgeon of the Deccan Division, on the use of the Iodide of iron. By D. Grierson, Esq.
—— IX. — A letter on the Fever which prevailed at Bankote in the S. Concan in 1841, addressed to the Superintending Surgeon of the Presidency Division. By T. Waller, Esq.

ART. X. — Remarks on the practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases. By John Peet, Esq.

—— XI. — Medico-Historical Abstract of the 1st year's service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons, at Kirkee, under the Bombay Presidency. By J. W. Moffat, Esq., Surgeon H. M.'s 14th Light Dragoons.

—— XII. — Observations on the good and bad effects of Calomel in some of the Diseases of India. By J. Murray, Esq.

—— XIII. — Annual Report of the 25th Regiment, N. I. for the year 1841. By A. Wright, Esq.

—— XIV. — Annual Report of the Civil Surgeon of Ahmedabad for the year 1841. By S. Sproule, Esq.

—— XV. — Contributions to Vegetable Embryology, from observations on the origin and developement of the Embryo in Tropœolum Majus. By Herbert Giraud, M. D. Edin. F. B. S. E. Ext. Mem. Med. Soc. Edin. &c. &c.

Appendix.

1. — Extract from a Letter on the Sickness at Kotra in Upper Sinde, addressed to the Superintending Surgeon, from W. T. Babington, Esq.

2. — Table, shewing the comparative Means and Extremes of Rain-fall and Temperature, at Malcolm Peth, Paunchgunnee, Bombay, and Poona, during the Rainy Season of 1842. By J. Murray, Esq.

3. — Annual return of Patients in the Lunatic Asylum, Bombay, from the 1st January to the 31st December 1841. By W. B. Barrington, Esq.

4. — The late Assistant Surgeon John Fraser Heddle.

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